EGYPT-JAPAN UNIVERSITY OF SCIENCE AND TECHNOLOGY
ARAB REPUBLIC OF EGYPT

PREPARATORY SURVEY REPORT
ON
THE PROJECT FOR PROCUREMENT
OF
EDUCATION AND RESEARCH EQUIPMENT
FOR
EGYPT-JAPAN UNIVERSITY OF SCIENCE AND TECHNOLOGY
IN
ARAB REPUBLIC OF EGYPT

JUNE 2016

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

INTEM CONSULTING, INC.

PREFACE

Japan International Cooperation Agency (JICA) decided to conduct the preparatory survey and entrust the survey to INTEM Consulting, Inc.

The survey team held a series of discussions with the officials concerned of the Government of Egypt, and conducted field investigations. As a result of further studies in Japan, the present report was finalized.

I hope that this report will contribute to the promotion of the Project and to the enhancement of friendly relations between the two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of Egypt for their close cooperation extended to the survey team.

June, 2016

Takao Toda
Director General
Human Development Department
Japan International Cooperation Agency

SUMMARY

Overview of the Country

Arab Republic of Egypt (hereinafter referred to as "Egypt") is located to the northeast of the African continent and is bordered by Libya to the west, Sudan to the south, Israel to the northeast. Egypt faces the Mediterranean Sea to the north and the Red Sea to the east. The majority of the land is desert except the valley and delta (Nile delta) of the Nile River, which flows from north to south. To the east of the estuary of the Nile River, there is the Suez Canal linking the Mediterranean Sea and the Red Sea. The land area is approximately 100 million square kilometers (about 2.6 times the size of Japan) and the population is about 91.51 million (UN: World Population Prospects, 2015 Revision). Administrative unit called Muhafaza (province, sometimes translated as the State) of Egypt is 27. On April of the year of the Egyptian revolution of 2011, Helwan province was re-incorporated in Cairo province and October 6 province was re-incorporated in Giza province. The administrative unit of Egypt was returned to the previous one of in April, 2008 before. Governors are dispatched from the Government and take a centralized system under the jurisdiction of the Ministry of Internal Affairs. The capital is Cairo.

Egypt belongs to the drying zone and the desert climate and has two typical seasons such as a mild winter from November to April and a hot summer from May to October. In the coastal zone, the climate varies from the average of minimum temperature of 14 degree C in winter to the average of maximum temperature of 30 degree C in summer. In the inland desert areas, there is a severe change in temperature, especially in summer. The temperature varies from 7 degree C at night to 43 degree C in the daytime. Annual rainfall in Cairo is just over 10mm and areas where annual rainfall is more than 80mm is rare. Annual rainfall of Alexandria and the areas around which is located at a coastal zone is relatively large of 200mm. One of the weather phenomenon of Egypt, there is a sand storm that blows across the country in the spring. The sand storm occurs frequently from April to May in general.

Regarding the economic situation in Egypt, the GDP is 246.43 billion USD and the GDP per capita is 3,003 USD. Egypt ranks in the top among four countries in North Africa such as Egypt, Libya, Morocco and Algeria, however, for the GDP per capita, Egypt ranks in the lowest among the four countries (African Statistical Yearbook 2014).

For the proportion of agriculture, industry and the service sector in GDP, although Egypt is reliant on the service sector centering tourism, the proportion of the industry sector has been increasing. The contribution of agriculture to GDP has been declining gradually by nearly half to 11.0% in 2014 from 19.3% in 1990. On the contrary, the industry sector, which had occupied 28.6% of GDP in 1990, has increased the proportion gradually, rising to 33.1% in 2000, which is almost doubled to the agriculture of 16.7%. The proportion reached up to 39.0% in 2014. The proportion of the service sector is approximately 50%, which has been unchanged from 1990's to 2014. (World Development Indicators 2015).

With regard to trade, the value of imports was 67.5 billion USD and the value of exports was

27.0 billion USD in 2014. Main regions for trade are EU (exports: 27.0%, imports: 30.7%), Arabian areas (exports: 20.0%, imports: 19.6%) and Non-Arabian areas (exports: 17.6%, imports: 21.0%). The main partner countries for trade in 2013 are USA (9.1%), Italy (8.0%) and China (6.0%). Trades with African countries are not so active and the proportion is only 1.7% of exports and 0.9% of imports. The total proportion of exports is approximately 40-50% and imports is 50-60% in average from 1990 to 2014. The amount of imports exceeds the amount of exports. (African Outlook Economic 2014、World Development Indicators 2015).

Background, History and Outline of the Requested Japanese Assistance

In recent years, the number of students has increased because of the exemption of the tuition fee of national universities in Egypt and consequently, the number of students per teacher has also increased. As a result, the decline in the quality of education is getting serious. Lectures in class in Egyptian universities are theory-centered and there are few universities which conduct a practical education with an advanced teaching method. The capacity of research of Egyptian universities are also limited because of the lack of research equipment. Furthermore, in many cases, the outstanding students of science and engineering fields who studied abroad are getting a job in foreign countries and that kind of draining away of talented brains is a major challenge in Egypt.

Egyptian government, in a "strategic framework for economic and social development plan up to 2022", has raised a building of a high-value-added industrial structure as one of its goals and as a human resource development strategy, the following points are mentioned in the framework; 1) the importance of science and technology in higher education, 2) the importance of practical techniques for the development of human resources engaging in advanced manufacturing sector.

Responding to the challenges in higher education sector mentioned above, the Government of Egypt has requested to the Government of Japan in 2005 of the assistance for establishing “Egypt-Japan University of Science and Technology (E-JUST: Egypt-Japan University of Science and Technology)” with the concept of “Few number of students, graduate school and research activity-oriented and offering practical and international level of education”, which is one of the specialities of Japanese engineering education. The Government of Egypt and Japan have concluded the bilateral agreement for the establishment of E-JUST in 2009. The both Governments have agreed to collaborate for the establishment and operation of E-JUST in the agreement. Based on the agreement, JICA had assisted the establishment of postgraduate school of engineering, which started in 2010, and strengthening of E-JUST through the implementation of the Technical Cooperation Project named “The Project for the establishment of Egypt-Japan University of Science and Technology (October, 2008 to January, 2014)”. After that, JICA has been implementing “The Project for Egypt-Japan University of Science and Technology Phase 2 (February, 2014 to January, 2019)”. Through the Project, the enhancement of the capacity of education and research in the postgraduate school of engineering, the acceleration of the collaboration between the industrial sector in

Egypt and E-JUST and the improvement of the operation of the postgraduate school of engineering, etc. have been tackled. E-JUST has currently been proceeding the planning of the establishment of undergraduate programs and a new campus targeting to September, 2017.

The objective of the Project is to facilitate the strengthening of basis of E-JUST as engineering university by providing advanced educational and research equipment for 8 Departments of the Faculty of Engineering such as the Department of Electronics and Communication Engineering (ECE), the Department of Computer Science and Engineering (CSE), the Department of Electrical Power Engineering (EPE), the Department of Industrial and Manufacturing Engineering(IME), the Department of Mechatronics Engineering (MTE), the Department of Materials Science and Engineering (MSE), the Department of Energy Resources Engineering (ERE), and the Department of Chemical and Petrochemicals Engineering (CPE) of E-JUST, which is located at Borg-El-Arab city, Alexandria in Egypt and to contribute to the realization of job creation and sustainable economic growth by promoting export and industrial development through the strengthening of cooperation between Egypt and Japan in the industry sector.

Outline of the Survey Results and Description of the Project

JICA organized a Survey Team for the development of outline design from October 10 to November 8, 2015. The Survey Team conducted the survey based on the request by the Egyptian side and held discussions with personnel from E-JUST, and other relevant ministries and organizations in Egypt. Subsequently, in Japan, the Team analyzed documents and information collected during the survey and prepared a Draft Preparatory Survey Report. The Team identified and prioritized educational and research equipment to implement bachelor programs of the Faculty of Engineering. The Survey Team returned to Egypt from January 11 to 25, 2016, explained the contents of the Draft Report to the Egyptian side. Since the equipment procured for the Project will be installed in laboratories of the new campus which will be constructed by the Egyptian side, the validity between the equipment and facility planning shall be required. Thus, the discussions with E-JUST and Isozaki, Aoki & Associates (hereinafter referred to as “IAA”) have been held from March 19 to April 2, 2016 in Egypt for integrating both plans and finalized this Preparatory Survey Report.

The major contents of the Project, which has been developed based on the series of discussions with the Egyptian side, are as follows.

(1) Scope of Works/Components

The objective of the Project is to facilitate the strengthening of basis of E-JUST as engineering university by providing advanced educational and research equipment and to contribute to the realization of job creation and sustainable economic growth by promoting export and industrial development through the strengthening of cooperation between Egypt and Japan in the industry sector.

The Government of Egypt has currently been proceeding the planning of the establishment of undergraduate programs and the new campus targeting to September, 2017.

The Project is providing the educational and research equipment necessary for the bachelor engineering education for 8 Departments such as the Department of Electronics and Communication Engineering (ECE), the Department of Computer Science and Engineering (CSE), the Department of Electrical Power Engineering (EPE), the Department of Industrial and Manufacturing Engineering(IME), the Department of Mechatronics Engineering (MTE), the Department of Materials Science and Engineering (MSE), the Department of Energy Resources Engineering (ERE), and the Department of Chemical and Petrochemicals Engineering (CPE) including the equipment for basic science such as physics, chemistry, biology and etc. All the equipment will be installed in the laboratories of the new campus buildings to be constructed by the Egyptian side.

(2) Equipment Plan

1) Equipment Selection Policy

The equipment of education and research for the Project shall be consistent with the contents of new undergraduate 4-year curriculum of E-JUST to be established in September, 2017. The following policies shall be applied for the equipment planning based on the results of the survey and discussions with the Egyptian side.

A. The education and research equipment shall be consistent with the contents of the curriculum of the Faculty of Engineering of E-JUST to be established in September, 2017. The equipment for basic science and basic engineering which is for 1-year and 2-year of undergraduate programs shall be put the highest priority. The equipment for applied engineering and then each specialized course which is for in 3-year and 4-year shall be chosen based on the curriculum of each engineering department. The frequency of use has also been considered for selecting the equipment.

B. The safety equipment which is needed and valid for the Project shall be selected.

C. Since the equipment for the Project will be installed in laboratories of the new campus buildings to be constructed by the Egyptian side, the equipment requiring the adjustment between Egyptian side and Japanese side in terms of the installation of the equipment (including electrical power capacity, water supply and drainage and etc.) shall be selected in a priority basis.

2) Equipment Selection Criteria

For selecting the equipment for the Project, the following criteria shall be utilized based on the policies mentioned above.

Table 2-1 : Equipment Criteria

Criteria for Selecting the Equipment	
1	The equipment necessary for implementing the curriculum for undergraduate programs of Engineering, the contents of engineering education and research and practical methods.
2	The equipment which requires no expensive consumable and spare parts frequently.
3	The equipment which is user-friendly and maintained properly by a engineer and technician of each department with low-maintenance-cost.
4	The safety equipment which is necessary and valid to include in the Project.
Criteria for Deleting the Equipment	
1	The equipment which is confirmed of the duplication with the equipment procured by Technical Cooperation Project.
2	The equipment which has no equivalent product and no reason for designating the specific model.
3	The equipment which has low-cost-effectiveness in terms of the frequency of use and etc.
4	The equipment which can be substituted by the function of other equipment to be procured for the Project.
5	The equipment which needs a large sized facilities and/or is difficult to include for the Project in terms of the budgetary limitation.

3) Criteria for Setting the Quantity

For the equipment installed in the new buildings constructed by the Project, the quantity has been set based on the purpose of use, the number of classroom per department/academic year, the number of student per department/class and etc. For the educational equipment for practice, the quantity has been set based on the purpose of use and the number of group per department/class.

4) Equipment Grades

For the equipment for educational and research of undergraduate programs, the equipment which can be used for implementing necessary curriculum shall be planned. Also, the equipment requiring consumable regularly and/or requiring checking and calibration periodically shall be confirmed on the existence of agents in Egypt or neighboring countries and/or on the route of the provision of consumable when quotations acquired so as to utilize the equipment procured for the Project.

Project Schedule and Cost Estimate

The implementation period for the Project will be about 15 months in total; 4.5 months for the detailed design, 2.0 months for tender procedures and 8.5 months of the procurement and installation of equipment. The total cost to be borne by the Egyptian side is estimated at approximately 0.02 million yen.

Project Evaluation

(1) Relevance

The Project is considered relevant as a Japanese Grant Aid Project based on the following points.

1) Beneficiary of the Project

The targeted area of the Project is Borg-El-Arab City, Alexandria, where E-JUST is located. E-JUST receives students from all over the country. Graduates of E-JUST are expected to be employed at higher educational institutions such as engineering universities, in the private sector, or at governmental ministries. Direct beneficiaries are approximately 123 lecturers of the Faculty of Engineering of E-JUST and approximately 2,000 students who will be educated in E-JUST in 2021 with the equipment provided by the Project. As E-JUST is the leading university in the field of engineering in Egypt, and the Project will contribute significantly to the industrial development.

2) Viewpoint of Human Security

Human security is a concept that encourages people's freedom from fear (such as conflicts and disasters), and want (poverty), ensuring that they live in safety and dignity. It involves thorough and comprehensive consideration for socially vulnerable people, and establishes mechanisms to protect and empower them. Through the implementation of the Project, opportunities for practical experiments at E-JUST will be increased and the capacity of the graduates will be enhanced, giving them more freedom to learn and empower themselves, eventually contributing to Egyptian's industrial advancement. Thus, the Project is consistent with the human security perspectives in improving the standard of living of Egyptian people.

3) Contribution to the Achievement of the Medium/Long Term Development Plan

Egyptian government, in a "strategic framework for economic and social development plan up to 2022", has raised a building of a high-value-added industrial structure as one of its goals and as a human resource development strategy, the following points are mentioned in the framework; 1) the importance of science and technology in higher education, 2) the importance of practical techniques for the development of human resources engaging in advanced manufacturing sector.

The Government of Egypt and Japan have concluded the bilateral agreement for the establishment of "Egypt-Japan University of Science and Technology (E-JUST)" in 2009. The both Governments have agreed to collaborate for the establishment and operation of E-JUST in the agreement. Based on the agreement, JICA has been assisting the establishment of postgraduate school of engineering and strengthening of E-JUST through the implementation of the Technical Cooperation Project "The Project for the establishment of Egypt-Japan University of Science and Technology" since 2008 and JICA has been currently implementing Phase 2 of the Project (2014-2019). The Project is providing the educational and research equipment necessary for the bachelor engineering education for 8 Departments such as the Department of Electronics and Communication Engineering (ECE), the Department of Computer Science and Engineering (CSE), the Department of

Electrical Power Engineering (EPE), the Department of Industrial and Manufacturing Engineering(IME), the Department of Mechatronics Engineering (MTE), the Department of Materials Science and Engineering (MSE), the Department of Energy Resources Engineering (ERE), and the Department of Chemical and Petrochemicals Engineering (CPE) including the equipment for basic science such as physics, chemistry, biology and etc. Thus, the Project is consistent with the objectives of the development plan of Egypt mentioned above.

4) Consistency with Japanese Policy for Official Development Assistance

In the ODA Policy for Egypt, as one of the objectives for assistance planning, "the sustainable development and the realization for the creation of employment" has been raised. As one of the important sectors, "the acceleration of exports and the development of industry" has been ranked among the sectors. JICA has formed "the program of the assistance for producing human resources for the industrial sector" based on the sector. The Projects such as "The Project for the establishment of Egypt-Japan University of Science and Technology (October, 2008 to January, 2014)", "Advisor to the Ministry of Higher Education (2014 to 2016)" and "The Project for Egypt-Japan University of Science and Technology Phase 2 (February, 2014 to January, 2019)" have been implemented relating to the capacity development of human resources with advanced skills. The Project is also consistent with the cooperation policy above.

(2) Effectiveness

The following table shows the outputs expected by implementing the Project.

1) Quantitative Effects

Indicators	Baseline (2017)	End line (2021) (4 years after completion of the Project)
① The number of students in 8 departments of the Faculty of Engineering	500	2,000
② The percentage of the number of hours of experiments, practices and research in departments	18.6%	32.8%

2) Qualitative Effects

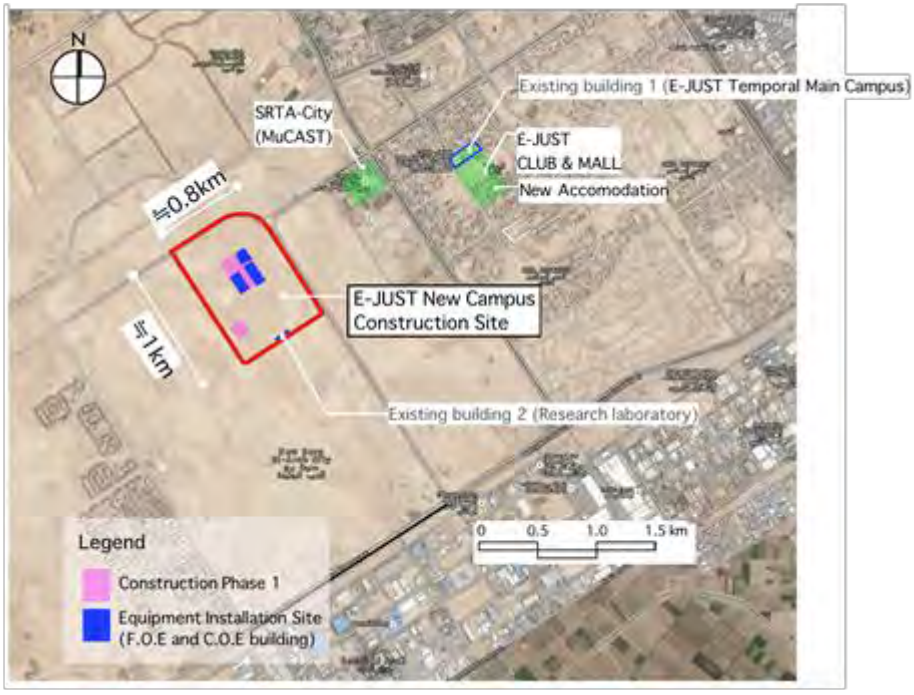
① Excellent graduates from E-JUST will contribute to the development of industrial fields of Egypt.

② The number of the applicant for admission to the Faculty of Engineering will show the trend of increase.

In conclusion, the validity of the Project to be implemented by Japanese Grant Aid has been ascertained and its anticipated effectiveness is also recognized.

CONTENTS

LOCATION MAP



LIST OF FIGURES AND TABLES

ABBREVIATIONS

Abbreviation	Original Name
A/P	Authorization to Pay
COE	Center of Excellence
DAC	Development Assistance Committee
E-JUST	Egypt-Japan University of Science and Technology
E/N	Exchange of Notes
EU	European Union
FOE	Faculty of Engineering
G/A	Grant Agreement
GDP	Gross Domestic Product
IAA	Isozaki, Aoki & Associates
ILO	Intended Learning Outcomes
JICA	Japan International Cooperation Agency
KOICA	Korea International Cooperation Agency
LAN	Local Area Network
MENA	Middle East and North Africa
MoHE	Ministry of Higher Education
MoHESR	Ministry of Higher Education and Scientific Research
MoSR	Ministry of Scientific Research
NTRA	National Telecommunications Regulatory Authority
OECD	Organization for Economic Co-operation and Development
PoE	Power over Ethernet
R&D	Research and Development
SCU	Supreme Council of Universities
SPU	Strategic Planning Unit
STEM	Science, Technology, Engineering and Math
UPS	Uninterruptible Power Supply
USAID	United States Agency for International Development

Chapter 1 Background of the Project

1-1 Background, History and Outline of the Requested Japanese Assistance

In recent years, the number of students has increased because of the exemption of the tuition fee of national universities in Egypt and consequently, the number of students per teacher has also increased. As a result, the decline in the quality of education is getting serious. Lectures in class in Egyptian universities are theory-centered and there are few universities which conduct a practical education with an advanced teaching method. The capacity of research of Egyptian universities are also limited because of the lack of research equipment. Furthermore, in many cases, the outstanding students of science and engineering fields who studied abroad are getting a job in foreign countries and that kind of draining away of talented brains is a major challenge in Egypt.

Egyptian government, in a "strategic framework for economic and social development plan up to 2022", has raised a building of a high-value-added industrial structure as one of its goals and as a human resource development strategy, the following points are mentioned in the framework; 1) the importance of science and technology in higher education, 2) the importance of practical techniques for the development of human resources engaging in advanced manufacturing sector.

Responding to the challenges in higher education sector mentioned above, the Government of Egypt has requested to the Government of Japan in 2005 of the assistance for establishing “Egypt-Japan University of Science and Technology (E-JUST)” with the concept of “Few number of students, graduate school and research activity-oriented and offering practical and international level of education”, which is one of the specialities of Japanese engineering education. The Government of Egypt and Japan have concluded the bilateral agreement for the establishment of E-JUST in 2009. The both Governments have agreed to collaborate for the establishment and operation of E-JUST in the agreement. Based on the agreement, JICA had assisted the establishment of postgraduate school of engineering, which started in 2010, and strengthening of E-JUST through the implementation of the Technical Cooperation Project named “The Project for the establishment of Egypt-Japan University of Science and Technology (October, 2008 to January, 2014)”. After that, JICA has been implementing “The Project for Egypt-Japan University of Science and Technology Phase 2 (February, 2014 to January, 2019)”. Through the Project, the enhancement of the capacity of education and research in the postgraduate school of engineering, the acceleration of the collaboration between the industrial sector in Egypt and E-JUST and the improvement of the operation of the postgraduate school of engineering, etc. have been tackled.

The objective of the Project is to facilitate the strengthening of basis of E-JUST as engineering university by providing advanced educational and research equipment for 8 Departments of the Faculty of Engineering such as the Department of Electronics and Communication Engineering (ECE), the Department of Computer Science and Engineering (CSE), the Department of Electrical Power Engineering (EPE), the Department of Industrial

and Manufacturing Engineering(IME), the Department of Mechatronics Engineering (MTE), the Department of Materials Science and Engineering (MSE), the Department of Energy Resources Engineering (ERE), and the Department of Chemical and Petrochemicals Engineering (CPE) of E-JUST, which is located at Borg-El-Arab city, Alexandria in Egypt and to contribute to the realization of job creation and sustainable economic growth by promoting export and industrial development through the strengthening of cooperation between Egypt and Japan in the industry sector.

1-2 Natural Conditions

The average temperature is higher than 25℃ from July to September, but the lowest average temperature of January and February is about 13℃. Precipitation from November to March is a lot and is especially high in December and January reaching up to about 50mm per month. Wind with sand blows from September until around May. Sand storm occurs particularly on April and May. It lasts for several hours even several days sometimes.

(1) Geography

The Project site is almost flat and there is a road with 2 lanes and good conditions to the site from the port in Alexandria. The size of the land is approximately 1,000 m x 800 m (approximately 840,000m^2). There is no construction around the site. Currently, there is one laboratory building in the south side for the new campus. There is a fence which has been under construction and surrounding the site.

(2) Existing Facilities and Other Infrastructure

The tentative existing campus buildings are located at approximately 2 km north-east from the site. 14 buildings with 5-storeies, which has been built for the dormitory of E-JUST, are currently utilized for office/laboratory/lecture (2 bldgs), for research (4 bldgs), for houses for staffs and students (7 bldgs) and for services (1 bldg). Another same sizes of 14 buildings are under construction at the opposite side of the north-block, which shall be utilized for administration and dormitory (to be completed in 2016). There is a building for research laboratories in the site of the new campus in near south-west border. Infrastructures such as electricity, water supply and etc. are already installed at the site. There is a transformer substation in the west of the site. A low voltage of 380-220V, 3-phase shall be supplied to the site.

(3) Climate

The average temperature is higher than 25℃ from July to September, but the lowest average temperature of January and February is about 13℃. Precipitation from November to March is a lot and is especially high in December and January reaching up to about 50mm per month. Wind with sand blows from September until around May.

Sand storm occurs particularly on April and May. It lasts for several hours even several days sometimes. Airtight fittings will be used in the new campus in consideration of the dust. Planting trees around the site boundary is planned for preventing wind and sand.

1-3 Environmental and Social Considerations

As the objective of the Project is to provide educational and research equipment for laboratories in the new buildings to be constructed within the premises of E-JUST by Egyptian side, no negative environmental and social impact will be seen.

Chapter 2 Contents of the Project

2-1 Basic Concept of the Project

Lectures in class in Egyptian universities are theory-centered and there are few universities which conduct a practical education with an advanced teaching method. The capacity of research of Egyptian universities are also limited because of the lack of research equipment. Furthermore, in many cases, the outstanding students of science and engineering fields who studied abroad are getting a job in foreign countries and that kind of draining away of talented brains is a major challenge in Egypt.

The Government of Egypt and Japan have concluded the bilateral agreement for the establishment of E-JUST in 2009. Based on the agreement, JICA had assisted the establishment of postgraduate school of engineering, which started in 2010, and strengthening of E-JUST through the implementation of the Technical Cooperation Project named "The Project for the establishment of Egypt-Japan University of Science and Technology".

The Government of Egypt has currently been proceeding the planning of the establishment of undergraduate programs and a new campus targeting to September, 2017. As E-JUST has no enough educational and research equipment for providing practical education, the Government of Egypt has requested the provision of the equipment to the Government of Japan.

The objective of the Project is to facilitate the strengthening of basis of E-JUST as engineering university by providing advanced educational and research equipment for 8 Departments of the Faculty of Engineering such as the Department of Electronics and Communication Engineering (ECE), the Department of Computer Science and Engineering (CSE), the Department of Electrical Power Engineering (EPE), the Department of Industrial and Manufacturing Engineering(IME), the Department of Mechatronics Engineering (MTE), the Department of Materials Science and Engineering (MSE), the Department of Energy Resources Engineering (ERE), and the Department of Chemical and Petrochemicals Engineering (CPE) of E-JUST, which is located at Borg-El-Arab city, Alexandria in Egypt and to contribute to the realization of job creation and sustainable economic growth by promoting export and industrial development through the strengthening of cooperation between Egypt and Japan in the industry sector.

2-2 Outline Design of the Requested Japanese Assistance

2-2-1 Design Policy

2-2-1-1 Basic Policies

The Government of Egypt plans to construct a new campus within the premise of E-JUST in Borg-El-Arab on September, 2017 for establishing undergraduate programs of the Faculty of Engineering. The objective of the Project is to provide educational and research equipment including basic science fields (Physics, Chemistry, Biology and etc.) for 8 departments of the

Faculty of Engineering. All the equipment procured for the Project is to be installed in laboratories in the new campus.

(1) Equipment Planning

The following policies shall be applied for the equipment planning based on the results of the survey and discussions with the Egyptian side.

A. The education and research equipment shall be consistent with the contents of the curriculum of the Faculty of Engineering of E-JUST to be established in September, 2017. The equipment for basic science and basic engineering which is for 1-year and 2-year of undergraduate programs shall be put the highest priority. The equipment for applied engineering and then each specialized course which is for in 3-year and 4-year shall be chosen based on the curriculum of each engineering department. The frequency of use has also been considered for selecting the equipment.

B. The safety equipment which is needed and valid for the Project shall be selected.

C. Since the equipment for the Project will be installed in laboratories of the new campus buildings to be constructed by the Egyptian side, the equipment requiring the adjustment between Egyptian side and Japanese side in terms of the installation of the equipment (including electrical power capacity, water supply and drainage and etc.) shall be selected in a priority basis.

(2) Considerations on the Layout and Allocation of the Equipment in the New Buildings

A. The large and heavy equipment shall be installed in laboratories on the ground floor. An independent concrete foundation shall be prepared when it deems necessary. A small and medium size equipment shall be put in laboratories on the first floor or above.

B. The equipment requiring a mechanical ventilation as a function of building service shall be identified and discussed with E-JUST/IAA when it deems necessary.

C. Regarding the demarcation between facility and equipment on gas supply, drainage and safety equipment, the conclusion of discussion with E-JUST/IAA shall be fully reflected into the design and drawings of the planned facilities.

D. Regarding the layout plan of workshops and laboratories in which the equipment with a vibration and noise and/or the equipment with delicate and precise function shall be installed, E-JUST/IAA shall be required a special consideration so as not to interfere each other. The certain adjustment shall be made when it deems necessary.

E. When the equipment requires a clean room, 24-hour air conditioning facility for controlling temperature, humidity and ventilation will be needed. In this case, it is required to consider operation and maintenance including the budget and staffs.

2-2-1-2 Policy regarding the Natural Environmental Conditions

(1) Temperature and Sunshine

As the average temperature is higher than 25℃ from July to September, the laboratories where the precise equipment to be installed shall be fully considered for providing air-conditioners and avoiding sunshine through windows. For layout planning, the designing of building services between equipment plan and facilities plan shall be carefully adjusted.

(2) Sand Protection

Wind containing sand blows from September through May and especially, sand storm occurs particularly on April and May. Airtight fittings will be used in the new campus in consideration of the dust. Planting trees around the site boundary is planned for preventing wind and sand.

2-2-1-3 Policy regarding the Social and Economic Conditions

The graduates of the Faculty of Engineering are expected to be an engineer with practical skills in Egypt. In other words, it is expected that the graduates can analyze the challenges in the industrial field of Egypt in the view of researcher and can present it to the company and/or factory. It is also expected that the graduates can proceed R&D with state-of-the-art equipment in the collaboration with universities using the knowledges and experiences of the equipment. For the planning of the equipment procured for the Project, the needs of human resources in the Industry of Egypt, shall be considered.

2-2-1-4 Policy for the Conditions of Procurement

The equipment of the Project is a practical one for undergraduate education. A certain number of the equipment is manufactured in Japan. However, for instance, practical equipment of module types for electrical and electronics fields, the third country products shall be included since there is no Japanese products for it. Also from the geographical conditions of northern Africa, the number of agents for European manufacturer is more than the those for Japanese manufacturer. Especially for the precision equipment, the necessity of the existence of a local agent is significant because of the frequency of the occurrence of trouble. For the equipment requiring the procurement of consumable ordinary, the situation is the same. Therefore, for the country of procurement, an appropriate country shall be considered item by item including the third country.

2-2-1-5 Policy on Use of Local Contractors

There are engineers with the skills of installation work and training for simple equipment in agents in Egypt, however, there are few engineers with the skills of installation and training for precision equipment and the equipment required a sophisticated skills. Therefore, it is assumed that the manufacturer's engineers from their home country or neighboring countries

of Egypt shall be dispatched for installation work and training of equipment that requires a particular advanced technology level.

2-2-1-6 Policy on Operation and Maintenance

For operation and maintenance of the equipment, Technology Management Department and all related Departments of E-JUST shall mainly carry out the work. Currently, TCP has been supporting the organization of the operation and maintenance system as one of the activities of the Project. For operation and maintenance of the equipment procured for the Project, the engineers and technicians of Technology Management Department and all related Departments of E-JUST shall operate the work. When the equipment is delivered to the site, the instruction for operation and maintenance shall be done for all the equipment. Especially for the precise equipment and the equipment requiring skilled operation and maintenance, Operation Training shall be planned adding to the normal ones so as to promote the secure and effective use of the equipment.

2-2-1-7 Policy on grade Setting for the Equipment

For the grade of the equipment, it shall be consistent with the contents of the curriculum for undergraduate program for E-JUST. For the selection of the equipment, an appropriate grade of the equipment to be used effectively shall be chosen. The policy of E-JUST is to adopt Japanese- style engineering education and to archive differentiation from other universities in Egypt by introducing distinctive laboratories and major fields. E-JUST also put the emphasis on the development of human resources for the industrial field in the area of Alexandria. Thus, a necessary grade of the equipment being consistent with the contents of the curriculum shall be secured.

2-2-1-8 Policy on procurement Method and Schedule

As mentioned in 2-2-1-4, regarding the setting of the country of procurement of the equipment for the Project, Japan and the third country procurement shall be set per equipment. For the implementation schedule of the Project, since 8 undergraduate programs of the Faculty of Engineering shall be established in September, 2017. With regard to procurement planning and schedule of the equipment, the delivery of all the equipment shall be done by July, 2017. Also, the tendering shall be divided into 4 lots in terms of securing competitiveness. Considering the allocation of laboratories in buildings, the field of the equipment (by Department/Laboratory) and the time of delivery of the equipment, the delivery and installation work shall be planned efficiently.

2-2-2 Basic Plan (Equipment Plan)

(1) Equipment Planning

During the discussions with E-JUST in Egypt, the following items have been confirmed.

Table 2-1 : The Contents of the Confirmation

Item	Contents of the Confirmation
Relating to the Undergraduate Programs	Corresponding curriculum for the Faculty of Engineering, Academic Year for each equipment, etc.
Purpose of Use	Course No. of the Undergraduate Program, Corresponding subjects, How to use in practice (for demonstration, for group work, etc.)
Criteria for Q'ty setting	Number of student, Number of group, etc.
Location to be installed	Name of Laboratories in the new campus, Layout Plan inside the laboratories
Utilities	Power Supply (Single-phase・Three-phase), Water Supply and Drainage, Gas Supply, etc.
Engineer for Operation and Maintenance	Number of Engineer, Number of Technician
Budget for Operation and Maintenance	Confirmation of a budgetary planning at E-JUST

(2) Equipment Selection Criteria

For selecting the equipment for the Project, the following criteria shall be utilized based on the policies mentioned above.

Table 2-2 : Equipment Criteria

Criteria for Selecting the Equipment	
1	The equipment necessary for implementing the curriculum for undergraduate programs of Engineering, the contents of engineering education and research and practical methods.
2	The equipment which requires no expensive consumable and spare parts frequently.
3	The equipment which is user-friendly and maintained properly by a engineer and technician of each department with low-maintenance-cost.
4	The safety equipment which is necessary and valid to include in the Project.
Criteria for Deleting the Equipment	
1	The equipment which is confirmed of the duplication with the equipment procured by Technical Cooperation Project.
2	The equipment which has no equivalent product and no reason for designating the specific model.
3	The equipment which has low-cost-effectiveness in terms of the frequency of use and etc.

4	The equipment which can be substituted by the function of other equipment to be procured for the Project.
5	The equipment which needs a large sized facilities and/or is difficult to include for the Project in terms of the budgetary limitation.

(3) Criteria for Setting the Quantity

For the equipment installed in the new buildings constructed by the Project, the quantity has been set based on the purpose of use, the number of classroom per department/academic year, the number of student per department/class and etc. For the educational equipment for practice, the quantity has been set based on the purpose of use and the number of group per department/class.

(4) Equipment Grades

For the equipment for educational and research of undergraduate programs, the equipment which can be used for implementing necessary curriculum shall be planned. Also, the equipment requiring consumable regularly and/or requiring checking and calibration periodically shall be confirmed on the existence of agents in Egypt or neighboring countries and/or on the route of the provision of consumable when quotations acquired so as to utilize the equipment procured for the Project.

(5) Power Voltage Fluctuation

It is confirmed that the fluctuation of voltage inside the premises of E-JUST is within ± 10%, therefore, almost all the equipment to be procured for the Project can be operated properly. However, for a certain equipment with precise function could get trouble at the time of blackout. For those equipment, Automatic Voltage Regulator and/or Uninterrupted Power Supply shall be included individually.

(6) Equipment Installation Plan

As mentioned in previous sections, E-JUST has been implementing the detailed design, which is entrusted to IAA, of the construction of new campus buildings for bachelor programs of the Faculty of Engineering establishing in September, 2017. Since all the equipment to be procured for the Project will be installed in laboratories in the new campus buildings, the utilities information of the equipment shall be properly reflected to the contents of the detailed design of the new campus buildings. In that course, the survey team has held meetings with IAA when it deemed necessary to understand the whole procedures of the schedule of the detailed design. The team has submitted the planned equipment information to IAA and also asked IAA to disclose the necessary information on the details of the new campus buildings.

The requirements of utilities for laboratories in the new campus buildings differ in each Department's field. Therefore, the conditions for the installation of the planned equipment has been categorized into four groups based on the type of laboratory. The required conditions have been determined by each type of laboratory. The survey team has informed the details of the categorization to IAA during the survey. (Refer to "6-1 The Types of Laboratories and the Requirements on the Specifications to the Buildings to be Constructed by Egyptian Side" of Appendix 6 "References")

Furthermore, during the Third Field Survey, which has been implemented after the Second Field Survey for the Explanation of Draft Survey Report, the detailed requirements on the installation of the equipment to be procured for the Project has been submitted to IAA from the survey team. (Refer to "6-2 The Comparison Table between the Planned Equipment and Laboratories in the New Campus Buildings" of Appendix 6 "References")

The List of Planned Equipment is as shown below.

Table 2-3 : List of Planned Equipment

Code No.	Name of Equipment	Q'ty	Lot
1	Electro analytical scale A	14	4
2	Water purifying system	1	4
3	Ice Maker	1	4
4	pH Meter	27	4
5	Digital Multimeter	27	4
6	DC Power Supply A	27	4
7	Absorption Spectrophotometer	14	4
8	Constant-temperature Bath	27	4
9	Micro melting point apparatus	14	4
10	Heating Block	27	4
11	Polarimeter	14	4
12	Centrifuge	7	4
13	Quantum Chemical Simulation Software	27	4
14	Magnetic Stirrer	27	4
15	UV Light Source	27	4
16	Universal Interface	14	4
17	Combined Gas Law Kit	14	4
18	2-Axis Magnetic Field Sensor	14	4
19	Coil and Voltage Sensor	14	4
20	Jolly Spring Balance	14	4
21	Water calorimeter	14	4
22	Digital Multimeter	56	4

Code No.	Name of Equipment	Q'ty	Lot
23	Optical Bench Set	14	4
24	He-Ne Laser	14	4
25	He-Ne Laser Base Mount	14	4
26	Simple Spectrometer	14	4
27	Line Spectrum Light Source	2	4
28	Measurement System of Temperature Coefficient of Metal Resistance	14	4
29	DC Power Supply B	14	4
30	Thermo Electromotive Force Measuring Apparatus	14	4
31	Absorption of Beta-Ray A	14	4
32	Absorption of Beta-Ray B	14	4
33	Electron Specific Charge Measurement System	14	4
34	Planck Constant Measurement System	14	4
35	Interactive Whiteboard System A	1	4
36	High Definition Projector	2	4
37	Intelligent Lectern A	1	4
38	Tensile Testing Machine	5	4
39	Thermal Expansion Trainer	5	4
40	Thermal Conductivity Trainer	5	4
41	Resistivity and Band Gap Measurements	10	4
42	Magnetism Measurement	10	4
43	Trinocular Microscope	5	4
44	Data Acquisition Using LabVIEW	10	4
45	Rockwell Hardness Tester	5	4
46	Viscometer	10	4
47	Vernier Caliper	20	4
48	Micrometer	20	4
49	Electric Balance B	5	4
50	Thermocouple	15	4
51	Desktop PC and monitor A	14	1
52	Electrical Measurement Instrument Set	14	1
53	Electrical Circuits Kit	14	1
54	PCB CNC machines	1	1
55	Data Acquisition Systems	14	1
56	Electronic Counters	14	1
57	Titrations Experiment (5 models)	10	1
58	Electrochemical Process Experimental	10	1

Code No.	Name of Equipment	Q'ty	Lot
59	Fuel Cell Trainer	1	1
60	UV/vis Spectrophotometer A	3	1
61	Chemical Process Industrial System	10	1
62	Clean Energy Trainer	3	1
63	Atomic Absorption A	2	1
64	Thermal Conductivity of Building Materials	5	1
65	Gas/Liquid Heat Conduction Trainer	5	1
66	Temperature Measurement Trainer	5	1
67	Pressure Measurement Trainer	5	1
68	Convection and Radiation	5	1
69	Steam Distillation Unit	1	1
70	Autoclave	3	1
71	Laboratory Furnace	2	1
72	UV Water Purification System	2	1
73	Electronics Circuits Lab	14	1
74	Electronics Circuits Kit	14	1
75	PCB CNC machines	1	1
76	Universal Grinding Machine	3	1
77	Hydraulic Press	1	1
78	Universal Milling Machine	6	1
79	Centrifugal Casting Set	3	1
80	Forging Induction Furnace	2	1
81	Forging Press	2	1
82	Mechanics Lathe with Milling Unit	6	1
83	Sand Casting Kit	10	1
84	Bell Casting Set	6	1
85	Lathe	6	1
86	Foundry Sand Mixing Unit	3	1
87	Portable MIG/TIG Welder	6	1
88	Bench Mounted Column Drill	3	1
89	Column Drill	3	1
90	Welding Booth	6	1
91	Spot Welding Unit with Arm Set	6	1
92	Manual Hydraulic Workshop Press	6	1
93	Arbor Press	3	1
94	Manual Arc Welding Station	6	1
95	Melting Furnace for Light Metal	2	1

Code No.	Name of Equipment	Q'ty	Lot
96	Universal Bender	3	1
97	Sheet Metal Forming Combination Machine	3	1
98	Hydraulic Tube Bender	3	1
99	Portable Oxyacetylene Welding Unit	6	1
100	Angle Iron Bender	3	1
101	Analog Measuring Tool Set	12	1
102	Conventional Cylindrical Grinding Machine	1	1
103	Universal Tool Grinding Machine	2	1
104	Dual Pedestal Grinder	3	1
105	Semi-Automatic Miter Band Saw	1	1
106	Hydraulic Surface Grinder	1	1
107	Sanding and Polishing Machine	2	1
108	Laser Cutting System	1	1
109	Surface Metrology and Form Measurement System	1	1
110	Basic CNC Training Center	1	1
111	Water-Jet Cutting System	1	1
112	Hydraulic Surface Grinder	1	1
113	Multipurpose Milling Machine	2	1
114	Precision Lathe	2	1
115	CNC Electric Wire Discharge Machine	1	1
116	Electric Discharge Machine	1	1
117	Semi-Automatic Miter Band Saw	1	1
118	Drill Press	1	1
119	Column Drill	2	1
120	Electronic Hardness Tester	1	1
121	Universal Tool Grinding Machine	1	1
122	Radial Drill Press	1	1
123	CNC Universal Turning Machine	1	1
124	Hardness Tester	1	1
125	Sanding and Polishing Machine	1	1
126	Interactive Whiteboard System B	1	1
127	High Definition projector	2	1
128	Instructor Graphics Workstation	1	1
129	A0 Plotter A	2	1
130	3D printer A	10	1
131	Application server	1	1
132	Intelligent Lectern B	1	1

Code No.	Name of Equipment	Q'ty	Lot
133	Smart graphics touch screen	1	1
134	Analog and Digital DC Servo System	2	2
135	Magnetic Levitation System	2	2
136	Digital Pendulum	2	2
137	Coupled Tanks System	2	2
138	Level/Flow/Temperature/Pressure Process Control	2	2
139	Ball & Beam Apparatus	2	2
140	Allen Bradley PLC Trainer	1	2
141	Siemens PLC Trainer	1	2
142	Universal Vibration Apparatus	2	2
143	Whirling of Shafts Apparatus	2	2
144	Static and Dynamic Balancing Machine	2	2
145	Impact Test Hammer	2	2
146	Machinery Diagnostic System	2	2
147	Computerized Vibration Analyzer	2	2
148	Electrical Measurement Instrument Set	8	1
149	Digital Systems Kit	8	1
150	Microprocessors and Microcontroller kit	8	1
151	Digital Pattern Generator	2	1
152	Logic Analyzer	2	1
153	Embedded Vision Starter Kit	8	1
154	Development Board	8	1
155	Raspberry pi kit	8	1
156	Arduino kit	8	1
157	Development kit	8	1
158	Digital Oscilloscope	2	1
159	Digital Multimeter	2	1
160	Regulated Power Supply C	2	1
161	Regulated Power Supply D	1	1
162	Inverted phase-contrast microscope	1	1
163	Stereo Microscope	1	1
164	System Microscope	1	1
165	Scanning Electron Microscope	1	1
166	Water Purifier for Highly Purified Distilled Water	1	1
167	Helium Leak Detector	1	1
168	3D Printer B	1	1
169	3D Printer C	1	1

Code No.	Name of Equipment	Q'ty	Lot
170	CNC Desktop Milling Machine	1	1
171	Cutting Plotter	1	1
172	PC + Monitor B	20	2
173	Applications server	1	2
174	Intelligent Lectern C	1	2
175	A0 plotter B	1	2
176	Instructor Graphics Workstation	1	2
177	high resolution projector	2	2
178	Graphics Editing touch tablets	1	2
179	PC + Monitor C	20	2
180	Graphics Touch Tablets	21	2
181	Interactive Whiteboard System C	1	2
182	3D printer D	1	2
183	3D printer E	10	2
184	A0 Plotter C	1	2
185	Application Server	1	2
186	Graphics Editing Touch Tablets	1	2
187	Desktop 3D Scanner	11	2
188	Portable Articulated Arm CMM	1	2
189	Instructor Graphics Workstation	1	2
190	High Resolution Projector	2	2
191	CO2 laser cutting systems	1	2
192	Mechanics Lathe	1	2
193	Drill Press/Milling Machine	1	2
194	Master CNC Training Center including CNC Lathe and Vertical Machining Center	1	2
195	Biomedical Measuring System	2	2
196	Precise Anthropometric Measuring Tools	3	2
197	High Pull Force Equipment	3	2
198	Ergonomic Assessment Tools	3	2
199	Precise Anthropometric Measuring Tools	3	2
200	Goniometer Set	3	2
201	Whole Body Vibration Exposure Assessment	2	2
202	Heavy Duty Vibration Meter	3	2
203	Eye Movement Recorder	1	2
204	Advanced Ergonomics Testing Kit and software	3	2
205	Physical Work Function Capacity Evaluation System	2	2

Code No.	Name of Equipment	Q'ty	Lot
206	OCCUPATIONAL SKILLS ASSESSMENT TEST BATTERY	3	2
207	Electronic Fitness Cycle	2	2
208	Reaction and Movement Time Panel with Pymcon Control	3	2
209	High Speed Digital Camcorder	2	2
210	Portable Sound and Vibration Analyzer	2	2
211	Personal Vibration Monitor	3	2
212	Whole-Body Vibration Dosimeter and Analyzer	3	2
213	Handheld Weather Station	3	2
214	Flicker Value Measurement Instrument	3	2
215	Infrared Thermometer	3	2
216	Lux-Meter	3	2
217	Flexible Manufacturing System	1	2
218	Interactive Whiteboard System D	1	2
219	RFID Training Kit	4	2
220	RFID Development Lab Kit	4	2
221	Measuring Tool Kit	8	2
222	External Digital Micrometer Set	8	2
223	Depth Micrometer A	8	2
224	Digital Vernier Caliper	8	2
225	Gauge Blocks Sets	8	2
226	Magnetic Measuring Stand	4	2
227	V- Blocks	10	2
228	Thread Gauge	4	2
229	Comparators Stand	10	2
230	Dial Gauge (English and Metric)	8	2
231	Horizontal Leveling Instrument	6	2
232	Square Leveling Instrument	6	2
233	Digital Protractor	8	2
234	Vernier Protractor	8	2
235	Thread Gauge	4	2
236	Height Digital Gauge	6	2
237	Thread Gauge	4	2
238	Surface Plate	1	2
239	small Surface Plate	8	2
240	Tool Makers Microscope	1	2

Code No.	Name of Equipment	Q'ty	Lot
241	Thread Testing Machine	3	2
242	Profile Projector	1	2
243	Inside Micrometer Set "A"	6	2
244	Inside Micrometer Set "B"	6	2
245	Bench Center	2	2
246	Micrometer Stands	10	2
247	Depth Micrometer 0-100 mm B	8	2
248	Internal Micrometer 5-30 mm	8	2
249	Verner Caliper 1/50	8	2
250	Vernier Caliper 1/20	8	2
251	High Resolution Projector	1	2
252	Robot Arm	3	2
253	Aerial Vehicle	2	2
254	Humanoid Robot Kit	4	2
255	Universal Mechanism Kit	2	2
256	Pneumatics and Electro-Pneumatics System	1	2
257	DC Transport System Workstation	1	2
258	AC Transport System Workstation	1	2
259	Sorting Station	1	2
260	Assembly Station	1	2
261	Processing Station	1	2
262	Testing Station	1	2
263	Handling Station	1	2
264	Storage Station	1	2
265	Routing Station	1	2
266	Buffering Station	1	2
267	Disassembly by Robot Station	1	2
268	Production Line with 3/4 Subsystems	1	2
269	Robot Technology for Mechatronics Applications	1	2
270	Assembly Technology Training Set	1	2
271	IMS Sensor Case	1	2
272	IMS Virtual Package	1	2
273	Robot Modules	12	2
274	Rockwell Hardness Tester	1	2
275	Vickers Hardness Tester	1	2
276	Friction and Wear Testing Machine	1	2
277	Universal Material Tester	1	2

Code No.	Name of Equipment	Q'ty	Lot
278	Ultrasonic Flaw Detector	3	2
279	Benchtop XRD	1	2
280	Upright Microscope	2	2
281	Stereoscope	4	2
282	Viscometer	2	2
283	UV/ Vis Spectrophotometer B	1	2
284	FT-IR Spectrometer	1	2
285	Four(or two) Point Probe	1	2
286	Mechanical Polishing Machine	3	2
287	Compression Mounting	1	2
288	Electric Balances C	5	2
289	Creep Testing Machine	2	2
290	Ball Milling	2	2
291	Mixer	1	2
292	Thieves	2	2
293	Hydraulic Presses	1	2
294	Induction Furnace (100gm)	3	2
295	Potentiostat and Galvanostat	1	2
296	Refrigerator and Freezer	1	2
297	Electric Balance D	5	2
298	Muffle Furnace	3	2
299	Rolling Machine A	1	2
300	Rolling Machine B	2	2
301	Cutting Machine	2	2
302	Impact Testing Machine	1	2
303	Vacuum Tube Furnace	2	2
304	Dry Oven	2	2
305	Hot Plate	5	2
306	Ice Making Machine	1	2
307	Double Water Distiller	2	2
308	Automatic Potential Tiltrotor	2	2
309	Heated Ultrasonic Cleaner	3	2
310	Homogenizer	2	2
311	Centrifuge	3	2
312	Hydraulic Lamination Hot Press	1	2
313	Single Screw Extruder for Lab.	1	2
314	Computer Interface Base Unit	6	1

Code No.	Name of Equipment	Q'ty	Lot
315	Android Mobile A	3	1
316	Instrumentation Package	6	1
317	Rraspberry Pi processor	12	1
318	DSP Starter Kit A	6	1
319	DSP Starter Kit B	6	1
320	Spectrum Analyzer	1	1
321	Android Tablet A	3	1
322	Android Tablet B	3	1
323	Android Mobile B	3	1
324	Operational Amplifier Circuit Trainer	12	1
325	Function Generator	12	1
326	Digital Multimeter	12	1
327	Digital Storage Oscilloscope	12	1
328	DC Power Supply E	12	1
329	Fiber Optics Educational Kit	3	1
330	Fiber Cleaver	3	1
331	DC Power Supply F	3	1
332	OptiSystem Perpetual Software "A"	1	1
333	Electronics Demonstration System A	7	1
334	RF Cable for Vector Signal Generator	1	1
335	DC Power Supply G	4	1
336	Function Generator	4	1
337	Digital Multimeter	4	1
338	Digital Storage Oscilloscope	4	1
339	AM Transceiver	4	1
340	RF System Design Kit	4	1
341	FM Transceiver	4	1
342	Basic Electronics lab	12	1
343	Antenna Training and Measuring System "A"	1	1
344	Antenna Training and Measuring System "B"	1	1
345	Vector Network Analyzer	1	1
346	Calibration Kit for Vector Network Analyzer	1	1
347	Adapter "A" for Vector Network Analyzer	4	1
348	Adapter "B" for Vector Network Analyzer	4	1
349	Adapter "C" for Vector Network Analyzer	4	1
350	Adapter "D" for Vector Network Analyzer	4	1
351	Adapter "E" for Vector Network Analyzer	4	1

Code No.	Name of Equipment	Q'ty	Lot
352	Adapter "F" for Vector Network Analyzer	4	1
353	RF cable "A" for Vector Network Analyzer	2	1
354	RF cable "B" for Vector Network Analyzer	2	1
355	RF cable "C" for Vector Network Analyzer	2	1
356	Circular Polarized Antennas	1	1
357	Horn Antenna	1	1
358	Basics Interface Unit	8	1
359	Three-Phase Technology Unit	2	1
360	Magnetism / Electromagnetism Unit	2	1
361	Photovoltaics Unit	2	1
362	Transient Processes in AC and DC Networks	2	1
363	Basics Interface Unit	8	1
364	Line-Commutated Power Converters, 3-Phase	2	1
365	Frequency Converter Drives	2	1
366	Line Commutated Converter Circuits 300W	2	1
367	Self-commutated converter circuits 300W	2	1
368	Field-oriented control of asynchronous machine with Matlab - Simulink 1kW	2	1
369	Basics Interface Unit	14	1
370	Basics of DC Machines	2	1
371	DC Machines 300W	2	1
372	Three-Phase Motor with Slip-Rings	2	1
373	Synchronous Machines 300W	2	1
374	Investigations on Three-Phase Transmission Lines	2	1
375	Directional Overcurrent Time Protection for Lines	1	1
376	Power Protection	1	1
377	Motor Management Relays	1	1
378	Manually operated synchronizing circuits	1	1
379	Automatic synchronizing circuits, automatic power control and automatic power factor control	1	1
380	Investigations on Three-phase Transmission Lines	1	1
381	Combined networks of cables and lines	1	1
382	Directional overcurrent time protection for lines	1	1
383	Busbar systems	1	1
384	Complex loads, power consumption measurement and peak load monitoring	1	1
385	Dynamic loads	1	1
386	Laser Rangefinder	4	1

Code No.	Name of Equipment	Q'ty	Lot
387	Data acquisition cards	4	1
388	Cameras for Windows	5	1
389	Illumination Sensors	4	1
390	IP Camera "A"	4	1
391	IP Camera "B"	4	1
392	GPS Sensor	4	1
393	Pressure sensor	4	1
394	Ultrasonic Sensor	4	1
395	Ultrasonic Distance Sensor	4	1
396	Khe3Base Kit with Board	2	1
397	Laser Range Finders with LRF Module	2	1
398	RC Programmable Helicopters	10	1
399	Laptop Computer MAC-Based	10	1
400	Laptop Computer Windows-Based	10	1
401	Tablet MAC-Based A	10	1
402	Tablet Android-based B	10	1
403	Light Field Camera	2	1
404	Camcorder	1	1
405	Digital Camera SLR	1	1
406	Robot "A"	10	1
407	Robotic Ball "A"	10	1
408	Robotic Ball "B"	10	1
409	Robot "B"	10	1
410	Surface Computer	3	1
411	3D Printer F	5	1
412	Blade Units	4	1
413	UV/vis Spectrophotometer C	1	3
414	Atomic Absorption B	1	3
415	Oven Furnace	1	3
416	Muffle Furnace	1	3
417	Analytical Balance	1	3
418	Shaking Incubator	2	3
419	High Speed Centrifuge	2	3
420	Rotary Evaporator	3	3
421	Liquid Diffusion Coefficient Apparatus	1	3
422	Chemical Reactors Apparatus	1	3
423	Three-Phase Catalytic Reactor	1	3

Code No.	Name of Equipment	Q'ty	Lot
424	Atomic Absorption C	1	3
425	Gas and Critical Point Unit	1	3
426	Mixing Enthalpy of Binary Mixtures Unit	1	3
427	Boiling Point Elevation in a Solution	1	3
428	Heat of Water Formation Unit	1	3
429	Solid-Liquid Extraction Unit	1	3
430	Anaerobic Water Treatment Pilot Plant	1	3
431	Aerobic Water Treatment Pilot Plant	1	3
432	Coagulation, Flocculation and Settling Point Plant	1	3
433	Atomic Absorption D	1	3
434	Potentiostat Unit	1	3
435	Fuel Cell Trainer	1	3
436	Corrosion Studies Kit	2	3
437	Electrochemical Experiments system	2	3
438	Level Control Process	2	3
439	Flow Control Process	2	3
440	Pressure Control Process	2	3
441	Temperature Control Process	2	3
442	Multifunction Process Control Teaching System	1	3
443	Boyle's Law Trainer	2	3
444	Gay-lussac's Law Trainer	2	3
445	Oil Density Meter	2	3
446	Oil Viscosity Meter	2	3
447	Pour Point Koehler Cloud and Pour Point Bath	2	3
448	Pensky Martens Flash Point Tester	2	3
449	Sulphur Content	1	3
450	Batch Distillation column	1	3
451	Liq/liq Extraction Unit with Packed Column	1	3
452	Gas Absorption Column	1	3
453	Crystallization Unit	1	3
454	Sedimentation Studies Apparatus	1	3
455	Heat Transfer Pilot Plant with Shell-and-Tube and Coil Heal Exchangers	1	3
456	Wet Cooling Tower	2	3
457	Change of State of Gases	2	3
458	Basics Renewable Energy Trainer	1	3
459	Basic Photovoltaics Unit	1	3

Code No.	Name of Equipment	Q'ty	Lot
460	Basic Fuel Cell Technology Unit	1	3
461	Small Wind Power Plant	1	3
462	Wind Power Plant System	1	3
463	Advanced Photovoltaics System	1	3
464	Advanced Fuel Cell Technology Training System	1	3
465	Modular Test Stand for Single Cylinder Engines, 2.2kW	1	3
466	Universal Drive and Brake Unit	1	3
467	Air Conditioning System Model	1	3
468	Ice Stores in Refrigeration	1	3
469	Capacity Control and Faults in Refrigeration Systems	1	3
470	Absorption Refrigeration System	1	3
471	Heat exchanger supply unit	1	3
472	Water Chiller for Heat Exchanger	1	3
473	Base Module for Experiments in Fluid Mechanics	1	3
474	Heat Transfer by Convection "A"	1	3
475	Thermal Radiation Unit	1	3
476	Heat Transfer by Conduction "B"	1	3
477	Clean Energy Trainer	1	3
478	Fuel Cell System	1	3
479	Fuel Cell Trainer	1	3
480	Solar Hydrogen Extension	1	3
481	Principles of Solar Thermal Energy	1	3
482	Solar Module Measurements	1	3
483	Sensor system of gas detection	1	3

(7) Safety Equipment Plan

Laboratories where the equipment to be procured for the Project will be installed are requiring the utilities for experiments such as electrical outlets, gas supplies, water supply and drains, etc. Generally, building services for safety management are equipped in a laboratory at universities. For instance, a gas detector shall be equipped in a laboratory and a warning lamp and/or other devices for alarming can be functioned when the gas detector catches the leakage of gas inside the laboratory. For the treatment of wastewater from laboratories, the installation of an independent sewage system shall be preferable which differs from the sewage system of domestic wastewater connecting to the toilet and kitchen, etc. It is preferable to conduct checking whether the wastewater contains a toxic substance (e.g. showing an excessive alkaline over the pH7) before draining the wastewater into the

public sewage lines. As standard building services to be equipped in university, an appropriate safety building service shall be planned considering the contents of the equipment for the Project. Although a gas detecting system shall be included in the Project, since the construction of the buildings are the scope of works of the Egyptian side, the adjustment between the equipment and buildings shall be fully implemented.

Regarding the conditions of installation, the equipment of the Project are divided into 4 categories and determined the conditions of requirements for each category (Please refer to 6-1 of Appendix 6). During the third survey in Egypt, detailed requirements by each laboratory had been prepared and notified to E-JUST/IAA (Please refer to 6-2 of Appendix 6).

2-2-3 Outline Design Drawing

Since the Project if only for the provision of the equipment, no design drawing is required

2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

(1) Basis for Project Implementation

This Project is to be implemented in accordance with Japan's Grant Aid Scheme. After the Project is approved by the Japanese Cabinet, the Governments of Japan and Egypt will sign on Exchange of Notes (E/N). Then, Grant Agreement (G/A) between JICA and the designated Ministry of the Government of Egypt will be signed. Subsequently, E-JUST will conclude a consulting services agreement for the Project with a Japanese consulting firm. Upon the completion of the detailed design, the Tender for selecting Japanese supplier(s) will be implemented and the awarded supplier(s) will enter into the contract(s) with E-JUST. After that the supplier(s) will start procurement procedures and implement the installation work for the Project. The followings shall be considered through the implementation of the Project.

(2) Project Implementation System

1) Implementing Organization on the Egyptian Side

The executing agency of the Government of Egypt for the Project is E-JUST, and E-JUST will be a signatory of relevant agreements and contracts. The appointed staff members of E-JUST will act as coordinators to manage operations during the implementation of the Project.

2) Consultant

After the signing of E/N and G/A mentioned above, E-JUST will conclude a consulting services agreement for the detailed design and supervision of the Project with a Japanese consulting firm and obtain verification from JICA in accordance with the Grant Aid Scheme. The consultant will implement the following works based on the contract.

① Detailed Design:

The consultant is to develop a detailed design, review the equipment plan, and prepare tender documents consisting of specifications, other relevant technical documents relating to the equipment. The consultant is also to estimate the costs of the equipment works.

② Tender Assistance

The consultant is to assist the executing agency (E-JUST) of Egypt in tendering to select supplier(s), and in preparing necessary documents for the contract(s). The consultant is also to assist reporting the results of the tender to the Government of Japan.

③ Procurement Supervision:

The responsibilities of the consultant is to confirm whether the supplier(s) are performing their respective works as specified in their contract(s).

The major tasks of the consultant is described below:

- Examine and confirm the equipment specifications and other relevant documents submitted by the supplier;
- Conduct pre-shipment inspection to examine and confirm the quality and performance of the equipment delivered;
- Ensure the delivery, installation, instruction for operation and maintenance and operation training of the equipment for the Project;
- To monitor and to report the progress of the equipment works;
- Witness the commissioning of the completed the procurement of the equipment.

In addition, the Consultant is to report the progress of the Project, procedure of payment, circumstances of handover after completion, etc to the relevant agencies such as JICA.

3) Equipment Supplier

A Supplier(s) are to be selected by open tender in which Japanese corporations are eligible to participate. In accordance with their respective contract, the supplier(s) are to procure, deliver and install the equipment as well as provide the Egypt side with operation and maintenance training for the equipment. Additionally, the supplier(s) are to prepare for logistic support together with the relevant manufacturers and local agencies so that the Project's target organization can purchase spare parts and consumable supplies and receive paid technical training after the equipment is handed-over to them.

2) JICA

As the implementing agency of the Government of Japan for the Grant Aid, JICA provides necessary services for executing the Project in accordance with the Japan's Grant Aid Scheme.

3) Procurement Planning

Regarding an actual procurement plan, it shall be adjusted between E-JUST and the Consultant during the period of the detailed design. The timing of the commencement and

its methods of the obligations for Japan and Egypt shall be confirmed and clarified respectively for smooth implementation of the schedule based on the report. Especially, the commencement of the construction work of the new campus implemented by Egypt side shall be duly completed before the announcement of the tender for the equipment procurement.

2-2-4-2 Implementation Conditions

(1) Implementation Conditions

The equipment to be procured for the Project shall be installed in the laboratories of new 5 (five) buildings which shall be constructed by E-JUST for the Faculty of Engineering starting from on September, 2017. Thus, the procurement schedule of the equipment shall be set according to the schedule of construction of the said new buildings. Prior to the shipment, the overall schedule such as the progress of the construction schedule, the status of the preparation of the laboratories inside and etc. shall be fully confirmed as it is ready or not. Since some of the equipment shall be adjusted for the preparation of utilities in terms of installation, the Supplier, the Contractor and the Consultant shall make a close contact each other to realize an appropriate management on the procurement schedule according to the progress of the construction.

(2) Tax Exemption Procedures

For getting a tax exemption of the imported equipment in Egypt, the permission of the tax exemption shall be necessary. E-JUST, which is the consignee of the Project, shall submit the following documents to the customs.

・A letter for the tax exemption addressed to the Director of Central Customs

・A letter for the special case of the tax exemption addressed to the Department of Central Management of the Customs

・A request form of receiving the documents relating to the shipment addressed to the Forwarder

Besides the documents above, shipping documents such as invoices, packing lists and etc. prepared by the Supplier shall be necessary to submit. Then, E-JUST shall pay regular charges to the Customs and have the equipment checked. The Customs judges if the equipment falls under the approval of NTRA (National Telecommunication Regulatory Authority). If not, the tax exemption shall be approved within 3 (three) days in general. The total duration of getting the approval shall be counted for 7 (seven) to 10 (ten) days.

2-2-4-3 Scope of Works

The Project is based on the cooperation of the governments of Japan and Egypt. The government of each side is responsible for the work as follows.

(1) Work to be borne by the Japanese side

Consulting services and procurement and installation of equipment as described below are to be the responsibility of the Government of Japan.

1) Consulting Services

・Preparation of detailed design and tender documents of the equipment.
・Assistance for selection of and contracting with an equipment supplier.
・Supervision of procurement, installation, initial instruction for operation and maintenance and operation training of the equipment.

2) Procurement and Installation of Equipment

・Trial operations and equipment adjustments.
・Explanations and initial training on operation and maintenance of equipment.
・Procurement, transportation to the Project site, and installation of construction materials, furniture, and equipment.

(2) Scope of Work for Both Countries

The following table shows the work to be borne by each Government.

Table 2-4 Major Undertakings to be taken by Recipient Government

1. Before the Tender

NO	Items	Deadline	In charge
1	To open Bank Account (Banking Arrangement (B/A))	May 2016 (within one month after G/A)	E-JUST
2	To secure the project sites (840,000m^2)	July 2015	E-JUST
3	To obtain the planning, zoning, building permit	before notice of the tender document	E-JUST
4	To clear, level and reclaim the project sites (840,000m^2)	before notice of the tender document	E-JUST
5	To submit the application of the Undergraduate Program of Faculty of Engineering to Supreme Council of University (SCU) engineering sector	January 2016	E-JUST
6	To obtain the primary approval of the Undergraduate Program by SCU engineering sector	April 2016	E-JUST
7	To approve the Detail Design (DD) submitted by the Consultant	August 2016 (the end of DD)	E-JUST

2. During the Project Implementation

NO	Items	Deadline	In charge
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
	1) Advising commission of A/P	June 2016(within 1 month after the singing of the contract)	MoIC, Central Bank, Ministry of Finance, E-JUST
	2) Payment commission for A/P	every payment	MoIC, Centrak Bank, Ministry of Finance, E-JUST
2	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country		
	Tax exemption and customs clearance of the products at the port of disembarkation	during the Project	E-JUST
3	To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work	during the Project	E-JUST
4	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the Products and/or the Services be exempted by its designated authority without using the Grant. Such customs duties, internal taxes and other fiscal levies mentioned above include sales tax and services tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract	during the Project	E-JUST, MoIC, MoF
5	To bear all the expenses including construction of the facilities, other than those to be borne by the Grant Aid,	during the Project	E-JUST
6	To submit Project Monitoring Report supported by Consultant	during the Project	E-JUST
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities		
	1) Electricity		
	The distributing line to the site	before start of the installation of the equipment (June 2017)	E-JUST
	2) Water Supply		
	The city water distribution main to the site	before start of the installation of the equipment (June 2017)	E-JUST
	3) Drainage		
	The city drainage main (for storm, sewer and others) to the site	before start of the installation of the equipment (June 2017)	E-JUST

	4) Furniture and Equipment		
	General and special furniture	before start of the installation of the equipment (June 2017)	E-JUST
8	To complete basic infrastructure of E-JUST new campus	November 2016	E-JUST
9	To complete the buildings of E-JUST new campus (Phase-I)	June 2017	E-JUST
10	To complete the utilities required for equipment installation such as power source, water supply and drainage, plumbing and exhaust duct and reinforced foundation.	June 2017	E-JUST

3. After the Project

NO	Items	Deadline	In charge
1	To maintain and use properly and effectively the equipment provided under the Grant Aid	After completion of the construction	E-JUST
	1) Allocation of budget for basic consumables for operations(every year)	After completion of the handing over the equipment	E-JUST
	2) Allocation of maintenance budget (maintenance contract provided by the supplier including spare parts)	After completion of the warranty periods	E-JUST
	3) Operation and maintenance organizational structure	After completion of the handing over the equipment	E-JUST
	4) Routine check/Periodic inspection	After completion of the handing over the equipment	E-JUST

(*)To be estimated during the tender and procurement phase

Table 2-5 Major Undertakings to be Covered by the Japanese Grant

No	Items	Deadline	In charge
1	To provide equipment		
	1) To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country	Within the execution period stipulated in the contract	Supplier
	a) Marine(Air) transportation of the products from Japan and third countries to the recipient country	Within the shipping date stipulated in the contract	Supplier
	b) Internal transportation from the port of disembarkation to the project site	Within the shipping date stipulated in the contract	Supplier
	2) To provide equipment with installation, commissioning and training	Within the execution period stipulated in the contract	Supplier
2	To implement detailed design, tender support and construction supervision (Consultant)		Consultant
	Total		

*; The cost estimates are provisional. This is subject to the approval of the Government of Japan.

2-2-4-4 Consultant Supervision

(1) Supervision Policies

Based on the policy of Japanese Grant Aid Scheme, the Consultant shall implement the works smoothly by organizing a project team with a consistency through the Project. The policy for procurement supervision as follows.

- Having a close contact with a person in charge of relevant organizations of both countries, the procurement of the equipment shall be completed without any delay.
- The Consultant shall make an appropriate assistance and advice to the supplier and relevant personnel with fairness and speediness.
- The Consultant shall make an appropriate assistance and advice on operation and maintenance after handing over the equipment. After the confirmation of installation work and the other obligations in the contract, the Project shall be completed having the certificate of completion of the services from E-JUST.

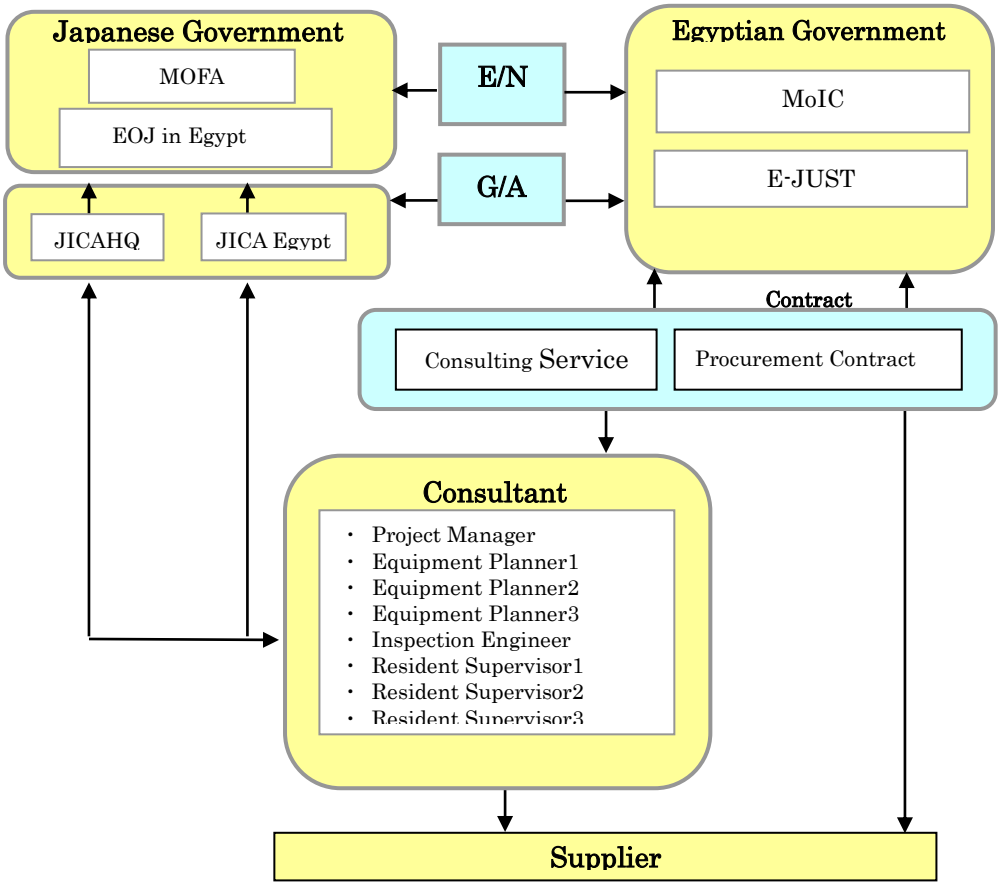


Figure 2-1 Implementing Organization for the Project

(2) Supervision Plan

1) Kick-off meeting/Confirmation of the equipment specifications in Japan

It is assumed that the schedule of equipment procurement such as ordering, inspection, shipment, transportation and installation, the organogram of the Supplier for the Project such as staffs, reporting procedures and etc. Required documents in tender documents such as equipment specifications, utility list and etc. shall be confirmed.

2) Shop Inspection in Japan

A part of the practical equipment shall be delivered to the designated warehouse in an assembled package for exporting at a manufacturer's factory. Therefore, a shop inspection shall be conducted before the delivery of the equipment at a manufacturer's factory. Inspection Engineer shall be in charge of the work.

3) Pre-shipment Inspection in Japan

The selection of an organization for inspection for pre-shipment inspection by a third-party organization, the preparation of necessary documents such as equipment specification for the pre-shipment inspection, the confirmation of the contents of the inspection report and the submission of the report of the completion of the pre-shipment inspection to E-JUST shall be conducted. Inspection Engineer shall be in charge of the work.

4) Supervision for Equipment Procurement at the Site

The supervising work such as for inspection, installation, adjustment, initial instruction for operation and maintenance and operation training implemented by the Supplier shall be conducted with the personnel of E-JUST at the site. The Consultant shall check the equipment procured if it is in accordance with the contract such as the name of manufacturer, model number, specifications and so on. For initial instruction for operation and maintenance and operation training, the check sheet including the signature of the completion of them shall be collected together with the name, title and section belonging to of persons who participated in it. A resident engineer for the supervision of equipment procurement shall conduct the work through the entire period of the whole works implemented by the Supplier at the site.

5) Final Inspection and Handing-over at the Site

Upon having the completion of the works above, the Consultant shall report to a responsible person of E-JUST on the completion of handing-over and proceed the necessary steps. A resident supervisor for the supervision of equipment procurement shall conduct the work.

6) Inspection for Defects before the Expire of Warranty at the site

The Consultant shall conduct the inspection for defects before the expiry of warranty at the site and file a report for the inspection. Inspection engineer shall conduct the work.

(3) Management for Equipment Procurement of the Supplier

1) Confirmation of Equipment Specifications

The schedule of equipment procurement such as ordering, inspection, shipment, transportation and installation, the organogram of the Supplier for the Project such as staffs, reporting procedures and etc. Required documents in Tender Documents such as equipment specifications, utility list and etc. shall be explained by the Supplier and the Consultant shall be approved it. Inspection engineer of the Supplier shall conduct the work.

2) Shop Inspection in Japan

A part of the practical equipment shall be delivered to the designated warehouse in an assembled package for exporting at a manufacturer's factory. Therefore, a shop inspection shall be conducted before the delivery of the equipment at a manufacturer's factory.

3) Pre-shipment Inspection in Japan

The preparation of the inspection with manufacturers and the assistance of the inspection with an organization for pre-shipment inspection by a third-party organization shall be conducted by the Supplier. Inspection Engineer shall be in charge of the work. The copies of the documents necessary for the shipment such as the bill of lading, insurance policy, invoice, packing list and so on shall be submitted to the organization for the inspection after the shipment.

4) Management for Equipment Procurement at the Site

The inspection, installation, adjustment, initial instruction for operation and maintenance and operation training for all the equipment procured for the Project shall be implemented by the Supplier with the presence of E-JUST at the site under the supervision by the Consultant. A resident engineer for the management of equipment procurement shall be conducted the work.

2-2-4-5 Quality Control Plan

The Consultant shall supervise the procurement procedures with the predetermined reference based on the approved documents for procurement. The predetermined reference shall be conformed to Japanese standards.

2-2-4-6 Procurement Plan

(1) Procurement of Equipment

Regarding the equipment to be procured for the Project, Japanese products and/or third country products, for which local agents and/or agents in neighboring countries can provide after-sales-service, shall be provided. For third country products, in addition to cost effectiveness, experience in using similar products at E-JUST and/or other universities /organizations, the existence of a local agent, and the diffusion rate shall also be considered. The quality of third country products shall also be assured by checking qualification criteria

of DAC and/or OECD members.

Table 2-6 Country of Procurement

Description	Q'ty	Country of Procurement			Remarks
		Local	Japan	Third country	
Basic Science	1 set	○	○		
Basic Engineering	1 set	○	○	○	Germany
Applied Engineering	1 set		○	○	UK
Electronics and Communication Engineering	1 set		○	○	USA
Computer Science and Engineering	1 set	○	○	○	USA
Electrical Power Engineering	1 set		○	○	Germany
Industrial and manufacturing Engineering	1 set	○	○	○	Germany
Mechatronics Engineering	1 set		○	○	Germany
Material Science and Engineering	1 set		○	○	USA
Energy Resources Engineering	1 set		○	○	Germany
Chemical and Petrochemicals Engineering	1 set		○	○	Italy

(2) Route of Transportation of Materials

The equipment for the Project shall be shipped from the port of embarkation in Japan and/or the third countries to the port in Alexandria. After the unloading at the port, the equipment shall be transported to the site by truck. The distance from the port in Alexandria to Borg-El-Arab is approximately.45 km and the conditions of the road is generally fine. For setting the duration of the transportation, the results of the preparatory survey and the estimates from forwarders shall be the basis.

2-2-4-7 Operational Guidance Plan

Having the equipment delivered, installed and commissioned, the initial instruction for operation and maintenance and operation training shall be carried out. Since the instruction on how to operate and maintain the equipment shall be definitely needed for the large equipment installed in workshops and the analytical equipment installed in laboratories and safety equipment, the engineers shall be dispatched from Japan and/or the third countries for implementing the initial instruction for operation and maintenance and/or operation training. Regarding the equipment not necessary for the installation, the initial instruction for operation and maintenance shall be done by the engineers dispatched by the supplier. The Consultant shall confirm if the instruction and/or operation training are implemented properly. When the equipment is handed over to E-JUST, a person in charge of each department, the consultant and the supplier shall confirm on the contents of the instruction and/or operation training and the level of understandings.

2-2-4-8 Soft Component Plan

For the Technology Management Department and all related Departments of E-JUST being responsible for operation and maintenance for the equipment, the TCP named E-JUST Project Phase 2 by JICA has been supporting the operation and maintenance in E-JUST. As

mentioned in 2-2-4-7, for the large equipment requiring the installation, the analytical equipment installing in chemical laboratories and safety equipment, operation training shall be implemented by the engineers of manufacturers. Thus, soft component shall not be required for the Project.

2-2-4-9 Implementation Schedule

The implementation schedule until the commencement of procurement, is as follows.

- The E/N is signed between the Government of Egypt and the Government of Japan, and the G/A is signed between the Government of Egypt (MoIC) and JICA.
- A Japanese consultant is recommended by JICA.
- The agreement of consulting services for the Project is concluded between E-JUST and the recommended consultant.
- The procurement work is to be commenced after detailed design, assistance of tender in Japan, and conclusion of the contract for procurement works.

(1) Detailed Design (approx. 4.5 months)

The Consultant prepares the detailed design document and the tender document, based on the report. It consists of specifications and relevant tender document and etc. The Consultant has close talks and meetings with E-JUST at the beginning and at the end of the detailed design phase. The detailed design phase will be completed after submission of the final deliverables, with confirmation of E-JUST.

(2) Tender (approx. 2.0 months)

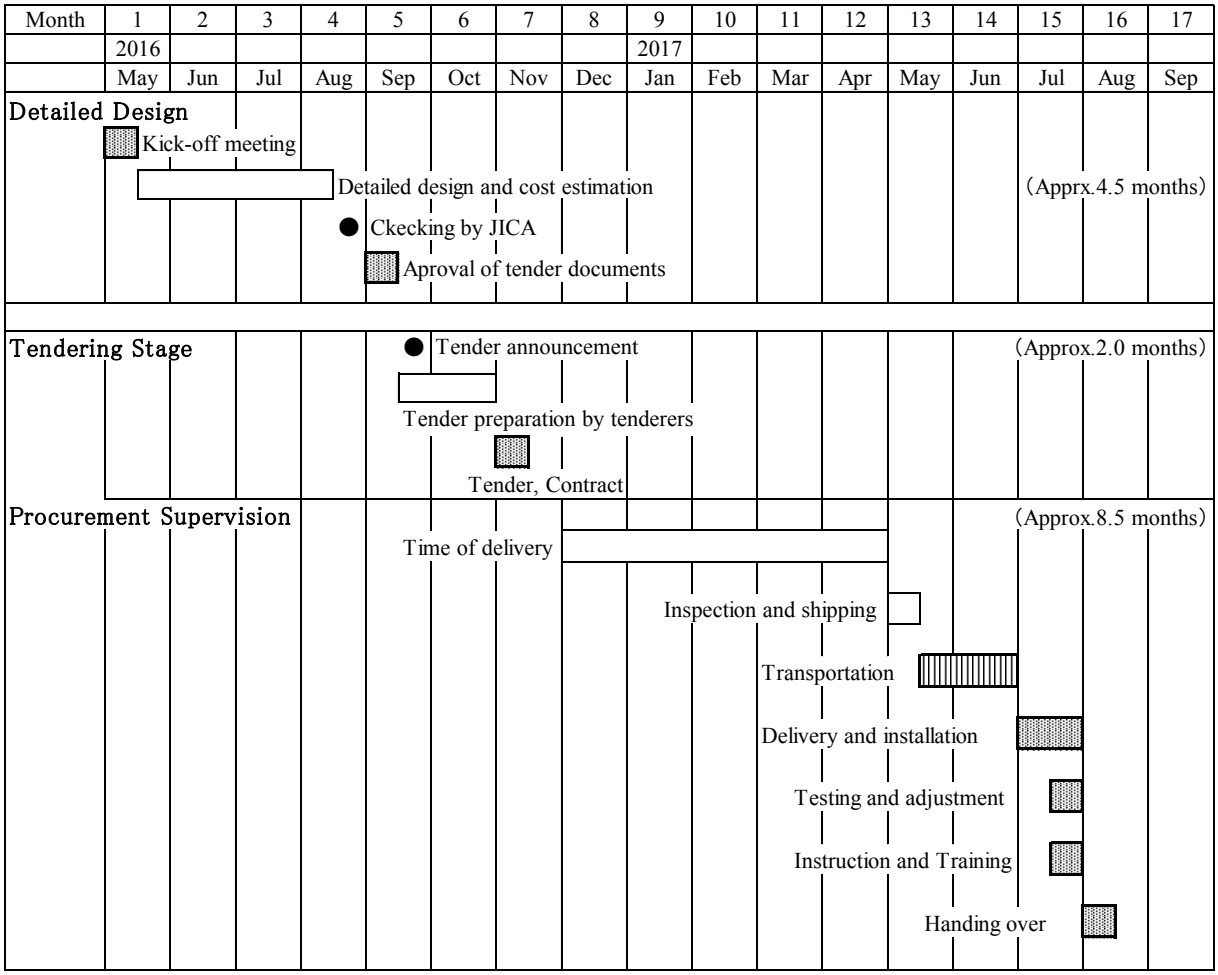
After detailed design, the tender for procurement will be announced in Japan. E-JUST will invite Japanese equipment suppliers who declare the intent to participate. Then E-JUST will conduct the tenders respectively with the assistance of the consultant under the presence of persons involved, and the tenderers who bid the lowest price within the ceiling price will make contract with E-JUST.

(3) Construction/Procurement (approx. 8.5 months)

The equipment works will be commenced, after the contract is verified by JICA. Considering the scale of the Project and the local conditions, the total period of equipment procurement as well as installation and operation training will approximately be 8.5 months. On the premise that the smooth procurement of materials and equipment, prompt execution of relevant procedures and implementation of works to be borne by the Egyptian side, are carried out.

The implementation schedule is as follows.

Table 2-7 Implementation Schedule



2-3 Obligations of Recipient Country

This Project will be implemented under the Grant Aid Scheme of the Government of Japan, and the Government of Egypt shall be responsible for the following tasks.

(1) Before the Tender

- To open Bank Account (Banking Arrangement (B/A))
- To secure the project site (840,000m^2) (completed) and obtain the planning, zoning and building permit, clear the level and reclaim the project site
- To submit the application of the Undergraduate Program of the Faculty of Engineering to Supreme Council of University (SCU) engineering sector
- To obtain the primary approval of the Undergraduate Program by SCU engineering sector
- To approve the Detail Design (DD) submitted by the Consultant

(2) During the Project Implementation

- To bear the following commissions to a bank of Japan for the banking services based upon the B/A such as Advising commission of A/P and Payment commission of A/P
- To ensure unloading and customs clearance at the port of disembarkation in recipient country
  －Tax exemption and customs clearance of the products at the port of disembarkation
- To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work
- To ensure that customs duties be exempted under the responsibility of the Egyptian side and internal taxes and other fiscal levies which may be imposed in Egypt with respect to the purchase of the Products and/or the Services be borne by its designated authority without using the Grant
- To bear all the expenses including construction of the facilities, other than those to be borne by the Grant
- To submit Project Monitoring Report supported by Consultant
- To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities
  －Electricity: distributing line to the site, Water Supply: the city water distribution main to the site, Drainage: the city drainage main to the site, Procurement of General Furniture
- To complete basic infrastructure of the E-JUST new campus
- To complete the buildings of the E-JUST new campus (Phase-I)
- To complete the utilities required for equipment installation

(3) After the Project

- To maintain and use properly and effectively equipment provided under the Grant Aid
  －Allocation of budget for basic consumable for operations (every year) and maintenance budget (maintenance contract provided by the supplier including spare parts, Operation and

maintenance organizational structure, Routine check/Periodic inspection

2-4 Project Operation Plan

(1) Organization for Operation and Maintenance

1) Number of Staffs

According to the planning of E-JUST, the number of staffs of E-JUST will be increased from approximately 100 staffs to 245 staffs including 74 of teaching staffs and 171 of the other staffs after the establishment of undergraduate programs of the faculty of Engineering in 2017.

2) Operation System

Regarding the operation and maintenance of the equipment, Technology Management Department and all relevant Departments of E-JUST shall be in charge of it. 2 (two) of engineers and/or technicians shall be allocated to each Department in the future plan. Having the support of the TCP, the organization and recruit of new staffs shall be proceeded. A maintenance contract for a large equipment with local agents shall be considered after the procurement of the equipment.

(2) Maintenance System

For the operation and maintenance of the equipment procured for the Project, the engineers and/or technicians of Technology Management Department of E-JUST shall be in charge mainly. When the delivery of the equipment, initial instruction for operation and maintenance shall be implemented for all the equipment. Especially, for the precise equipment and the equipment requiring the skilled operation and maintenance, operation training shall be implemented adding to the said general one. Having those components, the equipment for the Project shall be utilized effectively and properly.

The followings are the recommended structure for operation and maintenance for the Headquarters of E-JUST, the Faculty of Engineering and the relevant Departments. Although, some of the system have already been structured.

Table 2-8: The Proposal of Structure for Operation and Maintenance at E-JUST

The role of HQ of E-JUST	The role of the Faculty of Engineering	The role of each department
• Drafting of the policy for the implementation of operation and maintenance • Securing and allocation of the budget • Drafting of the allocation of human resources • Drafting of the planning for education of human resources	• The application of the budget for operation and maintenance to the headquarters of E-JUST based on the requirement of each department • The application for the allocation of human resources • The management of inventory list of the equipment • The collection of information from each department • Sharing of information with the headquarters of E-JUST through a periodical meeting • The implementation of seminars for the improvement of the technique for operation and maintenance targeting to lecturers engineers and technicians • Correspondence for the requirement of the repair of the equipment including the ordering to manufacturer's agent.	• The role and responsibilities for the head of department, a person in charge for operation and maintenance and lecturers shall be defined ・ The management of inventory list of the equipment by each department ・ The dissemination and instruction for students on how to use of the equipment ・ The daily checking for the shortage of spare parts and consumable of the equipment ・ The reporting and application for repair to the Faculty on a serious damage of the equipment • The role and responsibilities of engineers and technicians for daily maintenance including the repair on simple trouble of the equipment shall be defined ・ The implementation of daily maintenance including monitoring and record using a check list shall be done properly ・ The shortage of spare parts and consumable shall be checked ・ Adjustment and repairing of simple trouble of the equipment shall be done by a engineer and/or technician ・ The judgement of the cause of serious damages shall be done by a engineer and/or technician

2-5 Project Cost Estimation

2-5-1 Initial Cost Estimation

Details of the estimated expenses to be borne on the Egyptian side are as follows based on the conditions for calculating the amount shown in (2), when the Project is implemented through Japanese Grant Aid.

(1) Expenses to be borne by the Egyptian Side

: Approximately 130 thousand EGP (Approximately 2million JPY)

Table 2-9 Expenses to be borne by the Egyptian Side

No.	Item	Contents	Estimated Cost (EGP)	In charge
1	Banking charges	Advising commission and Payment commission of A/P	130,208.00	E-JUST
Total			130,208.00	

(2) Estimation Conditions

① Estimated as of: November, 2015
② Exchange rate: 1USD ＝122.20JPY
③ Procurement schedule: The required duration for detailed design and procurement stages is as shown in the Table 2-7 Implementation Schedule.
④ Other: Cost estimation shall be calculated based on the system of Japanese Grant Aid.

2-5-2 Operation and Maintenance Cost

(1) Operation and Maintenance Costs of Equipment

The equipment requiring consumable for its daily operation for the Project is shown in Table 2-10. The cost needed for each year is calculated based on the actual needs of the equipment plan according to the curriculum. The annual cost shown in the Table below is the average amount of 7 years considering the life-time of the equipment.

Table 2-10 Equipment Requiring Consumable for Daily Operation（Unit：EGP）

Description	Name of Consumable	Unit Price	Q'ty annually needed	Amount
Water Purifying System	Filter	300	1	300
Trinocular Microscope	Halogen Lamp	250	10	2,500
Universal Milling Machine	Face Milling Cutter	1,500	6	9,000
Machines Lathe with Milling Unit	Face Milling Cutter	1,500	6	9,000
	Turning Tool	1,500	6	9,000
Portable MIG/TIG Welder	Torch Nozzle	60	6	360
Sanding and Polishing Machine	Polishing Cloth	200	2	400
	Polishing Paper	50	20	1,000
Basic CNC Training Center	Face Milling Cutter	3,500	1	3,500
	Turning Tool	1,500	1	1,500
Multipurpose Milling Machine	Face Milling Cutter	3,500	2	7,000
Precision Lathe	Turning Tool	1,500	2	1,500
CNC Electric Wire Discharge Machine	Processing Wire	2,000	1	2,000
Electric Wire Discharge Machine	Processing Wire	2,000	1	2,000
Semi-Automatic Miter Band Saw	Blade	1,500	1	1,500
Radial Drill Press	Drill Bit	3,500	1	3,500
CNC Universal Turning Machine	Turning Tool	1,500	1	1,500
Inverted Phase-Contrast Microscope	Halogen Lamp	250	1	250
Stereo Microscope	Halogen Lamp	250	1	250
System Microscope	Halogen Lamp	250	1	250
Scanning Electron Microscope	Filament	3,000	1	3,000
Rockwell Hardness Tester	Hardness Standard Block	1,000	2	2,000
Vickers Hardness Tester	Hardness Standard Block	2,500	2	5,000
Benchtop XRD	Sample holder	20	100	2,000
Upright Microscope	Halogen Lamp	250	2	500
Stereoscope	Halogen Lamp	250	2	500
Mechanical Polishing Machine	Polishing Cloth	200	3	600
	Polishing Paper	50	30	1,500
Cutting Machine	Blade	1,500	2	3,000
Titrations Experiment (5models)	Regents	700	10	7,000

Electrochemical Process Experimental	Reagents	700	10	7,000
UV/vis Spectrophotometer	Reagents	700	6	4,200
Atomic Absorption	Reagents	1,500	6	9,000
Chemical Reactors Apparatus	Reagents	2,000	1	2,000
Solid-Liquid Extraction Unit	Reagents	3,500	1	3,500
Service Unit of Water Treatment Pilot Plant	Reagents	2,000	1	2,000
	Total			109,110

(2) Analysis of Operation and Maintenance

From the above, additional annual operating and maintenance expenses will be approximately 109 thousand EGP (approximately 1,676 thousand JPY) as shown in Table 2-10. The amount is approximately 20.8% of the total budget for maintenance in the year of 2014/15, which is approximately 525 thousand EGP (approximately 8,063 thousand JPY) in the next Table 2-11, Transition in E-JUST Expenditures for Maintenance Cost. Thus, it can be said that this operating and maintenance expenses are affordable.

Table 2-11 Transition in E-JUST Expenditures for Maintenance Cost（Unit：EGP）

Budgetary Items	2012/13	2013/14	2014/15
Maintenance Cost	179,908	90,032	524,904

Chapter 3 Project Evaluation

3-1 Preconditions

The objective of the Project is to provide educational and research equipment for bachelor programs of the Faculty of Engineering which will be newly established on September, 2017. Since the bachelor programs will be commenced on September, 2017, the implementation schedule is planned based on the time line. In this course, the Governments of Egypt and Japan agreed that Exchange of Notes won't be concluded between the both Governments unless otherwise the bachelor programs are approved by the Government of Egypt as scheduled.

Even the Project is targeting the existing University, E-JUST plans to construct a new campus buildings in neighboring place of current tentative premises and the equipment to be procured for the Project will be installed in laboratories in the new campus buildings. Although the buildings are scheduled to be completed in July, 2017, there will be no place to install the equipment without the completion of the buildings in time. Therefore, the both Governments have agreed that the commencement of the construction by the Egyptian side shall be a precondition for the announcement of the tender for the procurement of the equipment for the Project.

3-2 Necessary Inputs by Recipient Country

To complete the entire Project, the following points must be properly prepared and implemented by the Egyptian side.

- The implementation of the obligations of the Egyptian side mentioned in Chapter 2.
- Securing the necessary manpower and budget for use and maintenance of the procured equipment.
- Securing the necessary space and utilities for the equipment installed in laboratories of the new campus buildings

3-3 Important Assumptions

The Project involves procuring the necessary educational and research equipment for implementing the undergraduate programs of the Faculty of Engineering. The effective utilization of the procured equipment by teaching staff at E-JUST and the continuous implementation of high-quality exercises and experiments is required to generate skilled E-JUST graduates. To accomplish these goals, improvement of the curriculum and documents for experiments using equipment procured under the Project is required with the Technical Cooperation Project (TCP) currently implemented, centering on the 8 departments of the Faculty of Engineering targeted by the Project.

3-4 Project Evaluation

3-4-1 Relevance

The Project is considered valid as a Japanese Grant Aid project in terms of the following points.

(1) Beneficiary of the Project

The targeted area of the Project is Borg-El-Arab City, Alexandria, where E-JUST is located. E-JUST receives students from all over the country. Graduates of E-JUST are expected to be employed at higher educational institutions such as universities, in the private sector, or at governmental ministries. Direct beneficiaries are approximately 123 teaching staff members of the Faculty of Engineering of E-JUST and approximately 2,000 students who will be educated in E-JUST as of 2021 with the equipment provided by the Project. As E-JUST is the leading university in the field of engineering in Egypt, and the Project will contribute significantly to the industrial development.

(2) Viewpoint of Human Security

Human security is a concept that encourages people's freedom from fear (such as conflicts and disasters), and want (poverty), ensuring that they live in safety and dignity. It involves thorough and comprehensive consideration for socially vulnerable people, and establishes mechanisms to protect and empower them. Through the implementation of the Project, opportunities for practical experiments at E-JUST will be increased and the capacity of the graduates will be enhanced, giving them more freedom to learn and empower themselves, eventually contributing to Myanmar's industrial advancement. Thus, the Project is consistent with the human security perspectives in improving the standard of living of Egyptian people.

(3) Contribution to Achieving the Medium/Long Term Development Plan

Egyptian government, in a "strategic framework for economic and social development plan up to 2022", has raised a building of a high-value-added industrial structure as one of its goals and as a human resource development strategy, the following points are mentioned in the framework; 1) the importance of science and technology in higher education, 2) the importance of practical techniques for the development of human resources engaging in advanced manufacturing sector.

The Government of Egypt and Japan have concluded the bilateral agreement for the establishment of"Egypt-Japan University of Science and Technology (E-JUST)" in 2009. The both Governments have agreed to collaborate for the establishment and operation of E-JUST in the agreement. Based on the agreement, JICA has been assisting the establishment of postgraduate school of engineering and strengthening of E-JUST through the implementation of the Technical Cooperation Project "The Project for the establishment of Egypt-Japan University of Science and Technology" since 2008 and JICA has been currently implementing "Phase-II (2014-2019) of the Project". The Project is providing the educational and research equipment necessary for the bachelor engineering education for 8 Departments such as the Department of Electronics and Communication Engineering (ECE), the

Department of Computer Science and Engineering (CSE), the Department of Electrical Power Engineering (EPE), the Department of Industrial and Manufacturing Engineering(IME), the Department of Mechatronics Engineering (MTE), the Department of Materials Science and Engineering (MSE), the Department of Energy Resources Engineering (ERE), and the Department of Chemical and Petrochemicals Engineering (CPE) including the equipment for basic science such as physics, chemistry, biology and etc. Thus, the Project is consistent with the objectives of the development plan of Egypt mentioned above.

(4) Consistency with Japanese Policy for Official Development Assistance

In the ODA Policy for Egypt, as one of the objectives for assistance planning, "the sustainable development and the realization for the creation of employment" has been raised. As one of the important sectors, "the acceleration of exports and the development of industry" has been ranked among the sectors. JICA has formed "the program of the assistance for producing human resources for the industrial sector" based on the sector. The Projects such as "The Project for the establishment of Egypt-Japan University of Science and Technology (October, 2008 to January, 2014)", "Advisor to the Ministry of Higher Education (2014 to 2016)" and "The Project for Egypt-Japan University of Science and Technology Phase2 (February, 2014 to January, 2019)" have been implemented relating to the capacity development of human resources with advanced skills. The Project is also consistent with the cooperation policy above.

3-4-2 Effectiveness

The following shows the outputs expected by implementing the Project

1) Quantitative Effects

Indicators	Baseline (2017)	End line (2021) (4 years after completion of the Project)
③ The number of students in 8 departments of the Faculty of Engineering	500	2,000
④ The percentage of the number of hours of experiments, practices and research in departments	18.6%	32.8%

2) Qualitative Effects

① Excellent graduates from E-JUST will contribute to the development of industrial fields of Egypt.

② The number of the applicant for admission to the Faculty of Engineering will show the trend of increase.

In conclusion, the validity of the Project to be implemented by Japanese Grant Aid has been confirmed and its anticipated effectiveness is also fully recognized

Appendix 1 Member List of the Survey Team

1-1 Field Survey 1 (10 October - 8 November, 2015)

No.	Name	Position	Organization
1	Mr. Daisuke UEDA	Leader	Director, Technical and Higher Education Team, Higher Education and Social Security Group, Human Development Department, JICA
2	Mr. Hajime HIGUCHI	Cooperation Planning	Deputy Director, Technical and Higher Education Team, Higher Education and Social Security Group, Human Development Department, JICA
3	Mr. Akihiro OKAMOTO	Chief Consultant/ Equipment Planning 1	INTEM Consulting, Inc.
4	Mr. Kaoru TAJIMA	Sub-Chief Consultant/ Equipment Planning 2	INTEM Consulting, Inc.
5	Ms. Mayumi TERANO	Engineering Education	INTEM Consulting, Inc. (Akita International University)
6	Mr. Toshikazu SHIROIWA	Equipment Planning 3	INTEM Consulting, Inc. (T-Garden Co., Ltd.)
7	Mr. Ryoji OKAMOTO	Equipment Planning 4	INTEM Consulting, Inc.
8	Mr. Yukio NAGAHAMA	Equipment Planning 5	INTEM Consulting, Inc.
9	Ms. Yukiko KANAZAWA	Building Service/ Structure Planning	INTEM Consulting, Inc. (KDA LCC)
10	Ms. Misato OHARA	Management Planning 1/ Procurement 1/ Cost Estimation 1	INTEM Consulting, Inc.
11	Mr. Hiroyuki HARA	Management Planning 2/ Procurement 2/ Cost Estimation 2	INTEM Consulting, Inc.

1-2 Field Survey 2 (11-25 January, 2016)

No.	Name	Position	Organization
1	Mr. Daisuke UEDA	Leader	Director, Technical and Higher Education Team, Higher Education and Social Security Group, Human Development Department, JICA
2	Mr. Hajime HIGUCHI	Cooperation Planning	Deputy Director, Technical and Higher Education Team, Higher Education and Social Security Group, Human Development Department, JICA
3	Mr. Akihiro OKAMOTO	Chief Consultant/ Equipment Planning 1	INTEM Consulting, Inc.
4	Mr. Kaoru TAJIMA	Sub-Chief Consultant/ Equipment Planning 2	INTEM Consulting, Inc.
5	Ms. Yukiko KANAZAWA	Building Service/ Structure Planning	INTEM Consulting, Inc. (KDA LCC)

1-3 Field Survey 3 (19 March - 2 April, 2016)

No.	Name	Position	Organization
1	Mr. Ryoji OKAMOTO	Equipment Planning 4	INTEM Consulting, Inc.
2	Ms. Yukiko KANAZAWA	Building Service/ Structure Planning	INTEM Consulting, Inc. (KDA LCC)

Appendix 2 Survey Schedule

2-1 Field Survey 1

Field Survey			JICA Leader	JICA Cooperation Planning	PM/Equipment, Operation and Management Planning I	Sub-PM/Equipment, Operation and Management Planning II	Engineering Education	Equipment, Operation and Management Planning III	Equipment, Operation and Management Planning IV	Equipment, Operation and Management Planning V	Facility Planning/Structure of Facility	Operation and Management Planning I/ Equipment Procurement I/ Cost Estimation I	Operation and Management Planning II/ Equipment Procurement II/Cost Estimation II
1	10-Oct	Sat				Travel：QR (NRT→Doha)		Travel：QR (NRT→Doha)	Travel：QR (NRT→Doha)	Travel：QR (NRT→Doha)			Travel：QR (NRT→Doha)
2	11-Oct	Sun				Travel：QR (Doha→Alexandria)		Travel：QR (Doha→Alexandria)	Travel：QR (Doha→Alexandria)	Travel：QR (Doha→Alexandria)			Travel：QR (Doha→Alexandria)
3	12-Oct	Mon				Meeting on Inception Report at E-JUST		Meeting on Inception Report at E-JUST	Meeting on Inception Report at E-JUST	Meeting on Inception Report at E-JUST			Meeting on Inception Report at E-JUST
4	13-Oct	Tue		Travel (Haneda→Doha)		Discussion and survey on Epuipment Plan at E-JUST		Discussion and survey on Epuipment Plan at E-JUST	Discussion and survey on Epuipment Plan at E-JUST	Discussion and survey on Epuipment Plan at E-JUST			Discussion and survey on Epuipment Plan at E-JUST
5	14-Oct	Wed		Travel (Doha→Alexandria) Meeting with mission members		Team meeting		Team meeting	Team meeting	Team meeting			Team meeting
6	15-Oct	Thu		Working at JICA Samoha Office Meeting with E-JUST Faculty		Data Filing		Data Filing	Data Filing	Data Filing			Data Filing
7	16-Oct	Fri	Travel (Haneda→Alexandria)	AM: Travel (Alexandria→Cairo) PM: Documentation		Travel (Alexandria→Cairo)		Data Filing	Data Filing	Data Filing			Travel (Alexandria→Cairo)
8	17-Oct	Sat	Travel (Doha→Cairo)	AM: Documentation PM:Meeting with Japanese consultants	Travel：EK (NRT→Doha)	Data Filing and Team Meeting with JICA mission team	Travel：QR (NRT→Doha)	Data Filing and Team Meeting	Data Filing and Team Meeting	Data Filing and Team Meeting	Travel：QR (NRT→Doha)		Data Filing and Team Meeting with JICA mission team
9	18-Oct	Sun	AM: Meeting with Prof. El-Gofary and E-JUST representatives AM/PM: Meeting with MOFA, MOIC and/or MOHE AM/PM: Meeting with E-JUST members		Travel：EK (Doha→Cairo 11:25AM) Team Meeting	Data Filing	Travel：QR (Doha→Alexandria) Team Meeting	Discussion and survey on Epuipment Plan at E-JUST Team Meeting	Discussion and survey on Epuipment Plan at E-JUST Team Meeting	Discussion and survey on Epuipment Plan at E-JUST Team Meeting	Travel：QR (Doha→Alexandria) Team Meeting		Data Filing
10	19-Oct	Mon	AM/PM:Meeting for M/M with E-JUST and/or MOFA, MOIC AM/PM: Finalizing the draft M/M		AM/PM: Meeting for M/M with E-JUST and/or MOFA, MOIC AM/PM: Finalizing the draft M/M	AM/PM: Meeting for M/M with E-JUST and/or MOFA, MOIC AM/PM: Finalizing the draft M/M	Survey on Engineering Education (E-JUST/local companies)	Discussion and survey on Epuipment Plan at E-JUST	Discussion and survey on Epuipment Plan at E-JUST	Discussion and survey on Epuipment Plan at E-JUST	Meeting with IAA Meeting with E-JUST Travel		AM/PM: Meeting for M/M with E-JUST and/or MOFA, MOIC AM/PM: Finalizing the draft M/M
11	20-Oct	Tue	AM/PM: Signing M/M PM: Report to JICA Egypt Office		AM/PM: Signing M/M PM: Report to JICA Egypt Office	AM/PM: Signing M/M PM: Report to JICA Egypt Office	Survey on Engineering Education (E-JUST/local companies)	Discussion and survey on Epuipment Plan at E-JUST	Discussion and survey on Epuipment Plan at E-JUST	Discussion and survey on Epuipment Plan at E-JUST	Meeting with IAA and local consultants		AM/PM: Signing M/M PM: Report to JICA Egypt Office
12	21-Oct	Wed	Travel (Cairo→IST)	Travel (Cairo→Doha)	Travel (Cairo→Quesna-Cairo)	Travel (Cairo→Quesna-Cairo)	Survey on Engineering Education(Universities) Travel	Discussion and survey on Epuipment Plan at E-JUST	Discussion and survey on Epuipment Plan at E-JUST	Discussion and survey on Epuipment Plan at E-JUST	Preparation of saftey control list		Survey on equipment procurement
13	22-Oct	Thu		Travel (Doha→NRT)	Survey on Equipment operation and Management Planning	Discussion and survey on Epuipment Plan	Survey on Engineering Education (Government Agency)	Survey on Equipment operation and Management Planning	Survey on Equipment operation and Management Planning	Survey on Equipment operation and Management Planning	Meeting with local consultant		Survey on equipment procurement
14	23-Oct	Fri			Team Meeting	Travel (Cairo→Alexandria)	Team Meeting	Data Filing	Data Filing	Data Filing	Team Meeting		Team Meeting
15	24-Oct	Sat			Data Filing	Team Meeting	Data Filing	Team Meeting	Team Meeting	Team Meeting	Data Filing		Data Filing
16	25-Oct	Sun			Survey on Equipment operation and Management Planning	Survey on Equipment operation and Management Planning	Survey on Engineering Education (Government Agency)	Survey on Equipment operation and Management Planning	Survey on Equipment operation and Management Planning	Survey on Equipment operation and Management Planning	Preparation of saftey control list, utility list and review of campus plan		Survey on equipment procurement
17	26-Oct	Mon			Survey on Equipment operation and Management Planning	Survey on Equipment operation and Management Planning	Survey on Engineering Education (Universities/local companies)	Survey on Equipment operation and Management Planning	Survey on Equipment operation and Management Planning	Survey on Equipment operation and Management Planning	Preparation of saftey control list, utility list and review of campus plan		Survey on equipment procurement
18	27-Oct	Tue			Survey on Equipment operation and Management Planning	Survey on Equipment operation and Management Planning	Survey on Engineering Education (Universities/local companies)	Survey on Equipment operation and Management Planning	Survey on Equipment operation and Management Planning	Survey on Equipment operation and Management Planning	Survey on Engineering Education (Universities)		Survey on equipment procurement
19	28-Oct	Wed			Survey on Equipment operation and Management Planning	Survey on Equipment operation and Management Planning	Survey on Engineering Education (Universities)	Survey on Equipment operation and Management Planning	Survey on Equipment operation and Management Planning	Survey on Equipment operation and Management Planning	Survey on Engineering Education (Universities)		Survey on customs clearing and relative regulations
20	29-Oct	Thu			Survey on Equipment operation and Management Planning	Survey on Equipment operation and Management Planning	Survey on Engineering Education (Universities)	Survey on Equipment operation and Management Planning	Survey on Equipment operation and Management Planning	Survey on Equipment operation and Management Planning	Survey on Engineering Education (Universities)		Survey on customs clearing and relative regulations
21	30-Oct	Fri			Travel (Cairo→Alexandria)	Travel:QR (Alexandria→Doha)	Travel (Cairo→Alexandria)	Travel:QR (Alexandria→Doha)	Meeting for Equipment list	Meeting for Equipment list	Team Meeting		Travel (Cairo→Alexandria)
22	31-Oct	Sat			Data Filing	Travel：QR (Doha→Narita)	Travel:QR (Alexandria→Doha)	Travel：QR (Doha→Narita)	Data Filing	Data Filing	Survey on customs clearing and relative regulations		Travel:QR (Alexandria→Doha)
23	1-Nov	Sun			Discussion and survey on Epuipment Plan at E-JUST		Travel：QR (Doha→Narita)		Discussion and survey on Epuipment Plan at E-JUST	Discussion and survey on Epuipment Plan at E-JUST	Preparation of facility planning/structure of facilty		Travel：QR (Doha→Narita)
24	2-Nov	Mon			Survey on Equipment operation and Management Planning				Discussion and survey on Epuipment Plan at E-JUST	Discussion and survey on Epuipment Plan at E-JUST	Travel (Cairo→Alexandria) Discussion and survey on site		
25	3-Nov	Tue			Survey on Equipment operation and Management Planning				Discussion and survey on Epuipment Plan at E-JUST	Discussion and survey on Epuipment Plan at E-JUST	Discussion on facility planning Survey on site		
26	4-Nov	Wed			Travel (Alexandria-Cairo)				Discussion and survey on Epuipment Plan at E-JUST	Discussion and survey on Epuipment Plan at E-JUST	Discussion on facility planning Travel (Alexandria-Cairo)		
27	5-Nov	Thu			Signing of technical notes				Discussion and survey on Epuipment Plan at E-JUST	Discussion and survey on Epuipment Plan at E-JUST	Meeting with local consultant		
28	6-Nov	Fri			Data Filing				Discussion and survey on Epuipment Plan at E-JUST	Discussion and survey on Epuipment Plan at E-JUST	Data Filing		
29	7-Nov	Sat			Travel (Cairo→Alexandria) Travel:QR (Alexandria→Doha)				Travel:QR (Alexandria→Doha)	Travel:QR (Alexandria→Doha)	Travel (Cairo→Alexandria) Travel:QR (Alexandria→Doha)		
30	8-Nov	Sun			Travel：QR (Doha→Narita)				Travel：QR (Doha→Narita)	Travel：QR (Doha→Narita)	Travel：QR (Doha→Narita)		

2-2 Field Survey 2

	Date	Day	Time	Leader	Cooperation Planning	Chief Consultant	Sub-Chief Consultant	Facility Planning
1	Jan. 10	Sun						
2	Jan. 11	Mon				22:20 Narita (QR807)		
3	Jan. 12	Tue				17:05 Borg-el-Arab (QR1317)		
4	Jan. 13	Wed				AM: Meeting with Deans and Dept. Chairs PM: Meeting with faculties		
5	Jan. 14	Thu				All day: Meeting with faculties		
6	Jan. 15	Fri				Documentation	22:00 Narita (EK319)	22:00 Narita (EK319, subject to be changed.)
7	Jan. 16	Sat	AM		0:15 Haneda (QR813)	Move: (Alexandria to Cairo)	10:25 Cairo (T1, EK927)	10:25 Cairo (T1, EK927, subject to be changed)
			PM		12:00 Cairo (T1, QR1303)	Documentation		
					15:00 Internal meeting among mission members			
8	Jan. 17	Sun	AM		10:30 Meeting with Tax Authority	Meeting with E-JUST (E-JUST President) (1)		Meeting with IAA
			PM		12:00 Meeting with MOHE			
					14:00 Meeting with MOIC			
9	Jan. 18	Mon	AM		TBD: Meeting with Related ministries if necessary	Meeting with E-JUST (E-JUST President) (if necessary)		Meeting with IAA
			PM					
10	Jan. 19	Tue	AM	0:15 Haneda (QR813)	Documentation			Meeting with IAA
			PM	12:00 Cairo (T1, QR1303)				
				15:00 Internal meeting (among mission members)				
				17:00 Meeting with JICA Egypt Office (or Meeting with Ambassador Kagawa)		Documentation		
11	Jan. 20	Wed	All day	10:30 - 13:30? Discussion for the minutes (with E-JUST President and VPs)@Rosta Hotel and Resorts, WTC 5F.				Meeting with IAA
12	Jan. 21	Thu	All day	10:30 - 13:30 Discussion for the minutes （with E-JUST President and VPs) @Rosta Hotel and Resorts, WTC 5F.				Meeting with IAA
13	Jan. 22	Fri	All day	Documentation				
14	Jan. 23	Sat	All day	Discussion for the minutes (3: if necessary), Final drafting of the minutes Visit to a technical school and/or Nissan factory (for Mr. Higuchi).				Documentation
15	Jan. 24	Sun	AM	Minutes signing		Meeting with IAA (1)	Meeting with IAA/MZECH/Lab-Consultant (1)	
			PM	Report to JICA Egypt Office				
				Report to EOJ or Meeting with Mme. Aboulnaga				
				18:40 Cairo (T1, QR1302)		18:40 Cairo (T1, QR1302)		
16	Jan. 25	Mon	AM				Meeting with IAA/MZECH/Lab-Consultant (2)	
			PM	16:55 Narita (QR806)		16:55 Narita (QR806)		
17	Jan. 26	Tue	All day				Internal meeting / Documentation	
18	Jan. 27	Wed	All day				Internal meeting / Documentation	
19	Jan. 28	Thu	All day				19:00 Cairo (EK924)	
20	Jan. 29	Fri	All day				22:45 Haneda (EK312)	17:20 Narita (EK318, subject to be changed)

2-3 Field Survey 3

Date	Day	Consultant (Building Service/Stucture Planning)	Consultant (Equipment Planning 4)
19-Mar	Sat	22:00 Narita Airport (EK319)	22:00 Narita Airport (EK319)
20-Mar	Sun	10:25 Cairo Airport (EK927) Meeting with E-JUST/IAA	10:25 Cairo Airport (EK927) Meeting with E-JUST/IAA
21-Mar	Mon	Meeting with E-JUST/IAA	Meeting with E-JUST/IAA
22-Mar	Tue	Meeting with MZECH/Visiting Agents	Meeting with MZECH/Visiting Agents
23-Mar	Wed	Meeting with MZECH	Meeting with MZECH
24-Mar	Thu	Meeting with MZECH/Visiting Agents	Meeting with MZECH/Visiting Agents
25-Mar	Fri	Group meeting / Preparation of materials	Group meeting / Preparation of materials
26-Mar	Sat	Group meeting / Preparation of materials	Group meeting / Preparation of materials
27-Mar	Sun	Visiting Agents	Visiting Agents
28-Mar	Mon	Meeting with MZECH/Visiting Agents	Meeting with MZECH/Visiting Agents
29-Mar	Tue	Meeting with MZECH	Meeting with MZECH
30-Mar	Wed	Meeting with MZECH/Visiting Agents	Meeting with MZECH/Visiting Agents
31-Mar	Thu	Meeting with IAA/MZECH	Meeting with IAA/MZECH
1-Apr	Fri	19:00　Cairo Airport（EK924）	19:00　Cairo Airport（EK924）
2-Apr	Sat	17:20　Narita Airport（EK318）	17:20　Narita Airport（EK318）

Appendix 3 List of Parties Concerned in the Recipient Country

Organization	Section	Position	Name
Ministry of Higher Education / Helwan University	Strategic Planning Unit / Chinese-Egyptian Research Center	Director / Professor	Yasser M. Gadallah
Ministry of Higher Education / Ain-Shams University	Engineering Sector Council, Supreme Council of Universities	Chair / Professor	Dr. Mohamed Sheira
E-JUST		President	Ahmed El Gohary
		First Vice President	Masasaki Suzuki
	Support Services	Vice President	Ahmed Mohamed Zamel
		Secretary General	Saleh Gomaa
	Energy Resources Engineering	Professor	Mahmoud Amin Ahmed
		Professor	Ali Kamel Abdel-Rahman
		Assistant Professor	Mahmoud Bady
	Environmental Engineering	Professor	Ahmed Tawfik
		Doctoral course student	Ahmed Elreedy
	Chemical and Petrochemicals Engineering	Dean	Mona Gamal Eldin
		Professor	Ahmed El Shazly
		Associate Professor	Marwa Farouk Mohmoud El-Kady
	Industrial Engineering and Systems Management	Dean	Hassan El-Hofy
		Acting Chairperson	Amr B. Eltawil
	Materials Science and Engineering	Professor	Ahmed Abdel Moneim
		Associate Professor	Mohamed Abdel-Hady Gepreel
	Electronics and Communications Engineering	Dean	Amin Ahmed Shoukry
		Chairperson	Hossam Shalaby
		Associate Professor	Mohammed Sharaf Sayed
		Research Fellow	Ahmed Shalaby
		Assistant Professor	Moataz Mahmoud Abdelwahab
		Assistant Professor	Mohamed Abbas
		Assistant Professor	Ahamed Allam
		Laboratory Engineer	Alaa Zain el abdeen Mohamed Ali
		Associate Professor	Adel Adel Abdel Rahman
		Associate Professor	Maha El-Sabrouty
	Computer Sciense and Engineering	Acting Chairperson	Ahmed El-Mahdy
		Assistant Professor	Mohamed Elsayed Hussein
		Associate Professor	Wailid Gomaa

	Mechatronics and Robotics Engineering	Chairman	Abdelfatah M. Mohamed
		Professor	Ahmed Ali Abdelsoud
		Assistant Professor	Ahmed Fath El-Bab
		Assistant Professor	Mohamed Ahmed M. Fanni
		Assistant Professor	Aiman Omer
	Modern Mechanical Engineering	Doctor	Victor Parque
	College of Engineering	Assistant Professor	Ahmed Hassanin
American University in Cairo		Provost	Sherif Sedky
German University in Cairo	Faculty of Information Engineering & Technology	Professor	Yasser G. Hegazy
	Mechatronics Department, Academic Affairs	Head / Vice Dean	E.I. Imam Morgan
Cairo University	Structural Engineering Dep. Faculty of Engineering	Professor	Mohamed Mahdy Marzouk
	Faculty of Engineering	Dean / Professor	Sherif Ahmed Mourad
	Education & Students Affairs	Vice Dean / Professor	Aly Hatem Gabr
	Chemical Engineering Dept. Faculty of Engineering	Chairperson / Professor	Fatma El Zahraa Ashour
	Faculty of Engineering	Professor	Mohamed Elgamiel
Zewail University	Center for Learning Technologies and research scientist at the Center for Nanotechnology	Director / Dean of Students Affairs	Ashraf Badawi
Assiut University	Mechanical Engineering Dept. Faculty of Engineering	Professor	Ahmed Hamza H. Ali
Embassy of Japan in Egypt		First Secretary	Akie Hoshino
JICA Egypt Office		Chief Representative	Teruyuki Ito
		Senior Representative	Hikaru Goto
		Representative	Kenji Takada
		Representative	Kei Ikegami
		Representative	Noriko Shiiya
		Project Formulation Advisor	Sachiko Shah
Project for Egypt-Japan University of Science and Technology Phase		Chief Advisor	Shinji Yoshiura
		Sub Chief Advisor	Takayuki Sugawara
		Advisor for Dean of Graduate School of Innovative Design	Kozo Hiramatsu

2		Engineering	
		Superintendent / Adjunct Professor	Yoshihisa Matsushita
		Project Coordinator / Engineering Education	Takasei Okano
		Project Coordinator / University Administration	Keiichiro Taniguchi
		Project Coordinator / Education System	Kiyoko Tanaka
		Program Officer	Eiman Barakat
		Program Officer	Termine Torki
Japanese Supporting Universities	Section	Position	Name
Tokyo Institute of Technology	International Office, Tokyo Tech Egypt E-JUST Support office	Professor Emeritus	Teijiro Ichimura
	Chemical Engineering Department	Vice President for International Affairs	Hidetoshi Sekiguchi
		Associate Professor	Shinsuke Mori
	Department of Mechanical and Control Engineering, Graduate School of Science and Engineering	Professor	Masahiko Yoshino
		Associate Professor	Motoki Terano
	Department of Industrial and Management, Graduate School of Decision Science and Technology	Professor	Junichi Iijima
		Associate Professor	Yuji Tou
	Department of Civil Engineering, Graduate School of Science and Engineering	Associate Professor	Chihiro Yoshimura
Waseda University	Faculty of Science and Engineering	Professor	Kazunori Ueda
	Research Council	Senior Dean/Professor	Hiroshi Yamakawa
Kyoto University	Center for the promotion of Interdisciplinary Education and Research	Associate Professor	Koichi Nakamura
	Faculty of Engineering	Assistant Dean/Professor	Masahiro Ohshima
	Dept. of Chemical Engineering	Project Associate Professor	Kenji Yoshimoto
	Dept. of Micro Engineering	Professor	Osamu Tabata

	Dept. of Micro Engineering	Associate Professor	Toshiyuki Tsuchiya
Kyushu University	Research Institute of Superconductor Science and Systems	Technical Manager	Seiki Sato
	Graduate School of Information Science and Electrical Engineering	Chief Technical Official	Mitsuhiro Higashihata
	Theoretical Computer Science lab.	Technical Support Staff	Kiichiro Ohta
	Center for Japan-Egypt Cooperation in Science and Technology	Research Fellow	Hiroko Kinoshita
	Research Institute of Applied Mechanics	Research Fellow	Tomoyuki Nagai
		Professor	Yuji Ohya
		Research Assistant	Chigaya Oh
Architect Office for New E-JUST Campus	Section	Position	Name
Isozaki, Aoki & Associates		Associate	Karim El-Chahal
		Chief Operating Officer	Aiko Morise
		Senior Architect	Ko Oono
		Project Architect	Yusuke Komata
Japanese Company Visited	Section	Position	Name
Riamwind Corporation	Development Department	Engineer	Minoru Yamada
Egyptian Company Visited	Section	Position	Name
IBM World Trade Corporation	Government and Public Sector	C.E.O & Chief Engineer	Mohamed Yehia Morsid
		Account Manager	Mohamed Hamed
		Engineer	Amr Yassin
UNITEL		Chairman	Amir Wassef
El Araby	Full Automatic Washing Machine Factory	General Manager	Bayoumy Elyan
	Sharp Refrigerator Factory	General Manager	Sameh Seleem Mahmoud
	Innovative Project Management Execution	General Manager	Samy Fathy
		Consultant	Haruhiko Nakamura
Mannar Al Masharia Trading &		Planning Manager	A. Mandour

Construction			
Medhat Abu Zeid Egyptian Consulting House (MZECH)		Architect /Design Group Manager	Mamdouh MATTAR
Consulting Engineering Group (CEGMAN)		Director/Consultant Engineer	Mohamed OSMAN
Heinrich's Commercial Agency		Managing Director	Antoine Mansour
SMART SYSTEMS		Managing Director	Mohamed Abdel Aziz
CAIRO ENGINEERING & CHEMICALS CO.		Director	Sameh R. Naguib
NOZHA TRADING ORGANIZATION		Generral Manager	Basil Hakim
GIZA SYSTEMS & DISTRIBUTION		Generral Manager	Mohamed Kandil
Fujitsu		Senior H/W Presales Consultant	Ahmed Hamdy
JEOL SERVICE BUREAU		Products Manager	Hamdy Elakkad
ESPRANZA		Deputy Manager	Mohamed Ebeid
Beta Electronics		Chairman	Ahmed Shaaban
VALUE technologies		Chairman & Managing Director	Sayed Fathy
Quest (DELL)		Sales	Mohamed Sayed
imeSOLUTIONS (HP)		E-Marketing Director	Mohamed Mortada
Intercom		Technical Sales Advisor	Karim H. Abou-Hashim
DELTA COMPANY FOR ELECTRONICS		Generral Manager	Mostafa Omar
Multirolla		Executive Manager	Abeer Hefnawy
General Technologies		Manager	Maged Francis

Appendix 4 Minutes of Discussions (M/D)

4-1 Field Survey 1 (M/D)

Minutes of Discussions
on
the Preparatory Survey
for
the Project
for
Procurement of Education and Research Equipment
for
Egypt-Japan University of Science and Technology

In response to the request from the Government of the Arab Republic of Egypt (hereinafter referred to as "Egypt"), the Government of Japan decided to conduct a Preparatory Survey for the Project for Procurement of Education and Research Equipment for Egypt-Japan University of Science and Technology (E-JUST) (hereinafter referred to as "the Project"), and entrusted the Preparatory Survey to Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent the Preparatory Survey Team for the Outline Design (hereinafter referred to as "the Team") to Egypt, headed by Mr. Ueda Daisuke, Director, Technical and Higher Education Team of Human Development Department, and is scheduled to stay in the country from October 11th to November 7th, 2015.

The Team held a series of discussions with the officials concerned of the Government of Egypt. In the course of the discussions, both sides have confirmed the main items described in the attached sheets. The Team will proceed to further works and prepare the Preparatory Survey Report.

Cairo, October 20, 2015

Mr. Ueda Daisuke Leader Preparatory Survey Team Japan International Cooperation Agency Japan	Prof. Ahmad El-Gohary President Egypt-Japan University of Science and Technology Arab Republic of Egypt

Witnessed by

Mrs. Mona S. Ahmed Undersecretary of State for East-Asia Countries Ministry of International Cooperation Arab Republic of Egypt	Prof. Hossam El-Malehy First Undersecretary of State Head of Cultural Affairs & Mission Sector Ministry of Higher Education and Scientific Research Arab Republic of Egypt

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ATTACHEMENT

1. Objective of the Project

The objective of the Project is to support establishing quality undergraduate program of the Engineering Faculty (hereinafter referred to as "the Undergraduate Program") through procurement of education and research, equipment thereby contributing to Egypt-Japan University of Science and Technology (hereinafter referred to as "E-JUST") to become the leading university in science and technology field in the Middle-East and African Region.

2. Title of the Preparatory Survey

The title of the Preparatory Survey is "the Preparatory Survey for the Project for Procurement of Education and Research Equipment for Egypt-Japan University of Science and Technology."

3. Project Site

The site of the Project is New Borg Al-Arab City, which is shown in Annex 1.

4. Line Ministry and Executing Agency

4-1. The line ministry is Ministry of Higher Education and Scientific Research (hereinafter referred to as "MoHE"), which is the agency to supervise the executing agency.

4-2. The executing agency is E-JUST. The executing agency shall coordinate with all the relevant agencies to ensure smooth implementation of the Project and ensure that the Undertakings are taken by relevant agencies properly and on time. The organization charts are shown in Annex 2.

5. Target Departments

All departments under the Undergraduate Program (of the Faculty of Engineering) of E-JUST, which are listed below, are the target departments of the Project.

(1) Department of Electronics and Communications Engineering (ECE)
(2) Department of Computer Science and Engineering Department (CSE)
(3) Department of Mechatronics and Robotics Engineering (MTR)
(4) Department of Industrial Engineering and Management Systems (IEM)
(5) Department of Materials Science and Engineering (MSE)
(6) Department of Energy Resources and Engineering (ERE)

(7) Department of Chemical and Petrochemicals Engineering (CPE)
(8) Department of Electrical Power Engineering (EPE)

6. Items requested by the Government of Egypt

6-1. In the application form of the Project submitted by the Government of Egypt as of August 2014, the Government of Egypt requested education and research equipment for the Undergraduate Program as per Annex 3.

6-2. JICA will assess the appropriateness of the above requested items through the survey and will report findings to the Government of Japan. The final components of the Project will be decided by the Government of Japan.

7. Japanese Grant Scheme

7-1. The Egyptian side understands the Japanese Grant Scheme and its procedures as described in Annex 4, Annex 5 and Annex 6.

7-2. The Egyptian side understands to take the necessary measures, as described in Annex 7, for smooth implementation of the Project, as a condition for the Japanese Grant to be implemented. The detailed contents of the Annex 7 will be worked out during the survey and shall be agreed no later than by the Explanation of the Draft Preparatory Survey Report.

The contents of Annex 7 will be used to determine the following:

(1) The scope of the Project.
(2) The timing of the Project implementation.
(3) Timing and possibility of budget allocation.

Contents of Annex 7 will be updated as the Preparatory Survey progresses, and will finally be the Attachment to the Grant Agreement.

8. Schedule of the Survey

8-1. The Team will proceed with further survey in Egypt until November 7th, 2015.

8-2. JICA will prepare a draft Preparatory Survey Report in English and dispatch a mission to Egypt in order to explain its contents around the early January 2016.

8-3. If the contents of the draft Preparatory Survey Report is accepted in principle and the Undertakings are fully agreed by the Egyptian side, JICA will complete the final report in English and send it to Egypt around March 2016.

8-4. The above schedule is tentative and subject to change.

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9. Environmental and Social Considerations

The Project is categorized as C because the Project has minimal or no adverse social or environmental risks, and need not apply any other specific requirements.

10. Other Relevant Issues

10-1. E-JUST explained that the Undergraduate Program will be commenced in September 2017. The schedule until the commencement of the Undergraduate Program is attached as per Annex 8.

10-2. E-JUST explained that E-JUST has already prepared the study plans of 8 departments as per Annex 9 which is the basis of the curriculum of the Undergraduate Program. E-JUST will formulate the whole campus development plan including the curriculum of the Undergraduate Program, and submit it to the Supreme Council of Universities (hereinafter referred to as "SCU") to obtain the official permission b y the Government of Egypt in December 2015. E-JUST expects to obtain the approval by April 2016.

10-3. E-JUST explained that the new campus construction shall be conducted as their own project. The schedule of campus construction is attached as per Annex 10.

10-4. E-JUST explained that the budget plan and human resource allocation plan from 2017 to 2021 has been drafted by E-JUST and be authorized in the Board of Trustees (hereinafter referred to as "BOT") Meeting in December 2015.

10-5. E-JUST and JICA confirmed that the Egyptian side must adhere to the plans stipulated in 10-1 to 10-4, since it is the premise to implement the Project. Hence, E-JUST committed they will implement their plans without any delay. Moreover, JICA will not request the authorization of implementation of the Project to the Government of Japan unless E-JUST has completed application of the Undergraduate Program establishment plan to SCU. Egyptian side understood that JICA will start the tender announcement of the equipment after campus building construction (Phase 1) was started by the Egyptian side.

10-6. The detailed design of the new campus development project has been entrusted by the Government of Egypt to Isozaki, Aoki & Associates Co.Ltd (hereinafter referred to as "IAA"). Egyptian side understood that IAA may have necessity to reflect the result of the Preparatory Survey into their detailed design in order to install equipment by the Project as well as to accommodate accompanying facilities to these equipment. The Preparatory Survey team will provide equipment and utilities' data to IAA. IAA will prepare the detailed design and workshops of the laboratories according to the documents provided by the Preparatory Survey

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Team. E-JUST will approve the detailed drawing by IAA in close consultation with JICA. E-JUST committed to coordinate the overall activities.

10-7. Among the requested equipment list by the Government of Egypt as per Annex 3, E-JUST and JICA confirmed the most prioritized equipment is for science and engineering education of the Undergraduate Program. However, some additional equipment and facilities which are not listed in Annex 3 are needed to be installed for realizing safety condition of laboratories similar to Japanese top level universities. E-JUST and JICA confirmed JICA can propose these equipment and facilities to be added into the list if needed. Furthermore, both also confirmed that conformity with the study plans and budget ceiling by the Government of Japan for the Project need to be taken into account while selecting the equipment. Furthermore, both confirmed general and laboratory furniture, and office utilities would be excluded from the scope of the Project and borne by Egyptian side. The Equipment list will be compiled in the Technical Note at the end of the Outline Design, and finalized through consultations with the Japanese Supporting Universities.

10-8. The Egyptian side committed to ensure that customs duties, internal taxes and other fiscal levies which may be imposed in Egypt with respect to the purchase of the Products and/or the Services be exempted.

10-9. The Egyptian side committed necessary budget and human resource will be allocated for implementation of the Project. Moreover, they also committed necessary maintenance and renovation will be conducted by their own effort after installment of equipment provided by the Project.

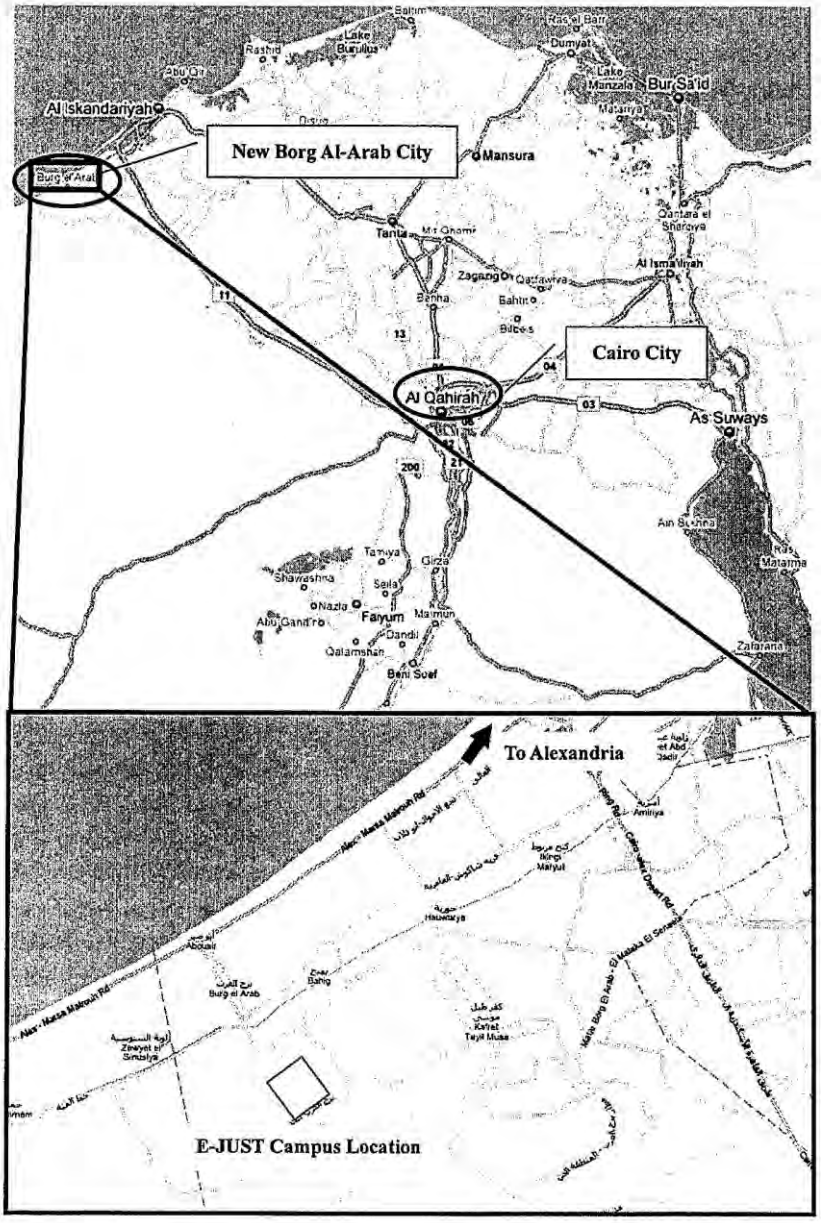
10-10. The Egyptian side agreed site clearance would be taken by Egyptian side before the commencement of instalment of equipment of the Project. The Egyptian side also agreed that JICA can request the result of geological survey and water quality inspection as such, in case heavy weight equipment and equipment need to utilize high degree of purity of water would be installed.

10-11 Egyptian side agreed all necessity utilities for the Project such as water and electricity will be borne by Egyptian side.

(End)

Annex 1 Project Location
Annex 2 Organization Chart
Annex 3 Equipment List Requested by the Government of Egypt
Annex 4 Japanese Grant
Annex 5 Flow Chart of Japanese Grant Procedures
Annex 6 Financial Flow of Japanese Grant
Annex 7 Major Undertakings to be taken by Each Government
Annex 8 Schedule for the Commencement of the Undergraduate Program of the Faculty of Engineering
Annex 9 Study Plans of the Undergraduate Program in the Engineering Faculty
Annex 10 Schedule of the Campus Construction and Equipment Installation
Annex 11 Project Monitoring Report (template)

Project Location



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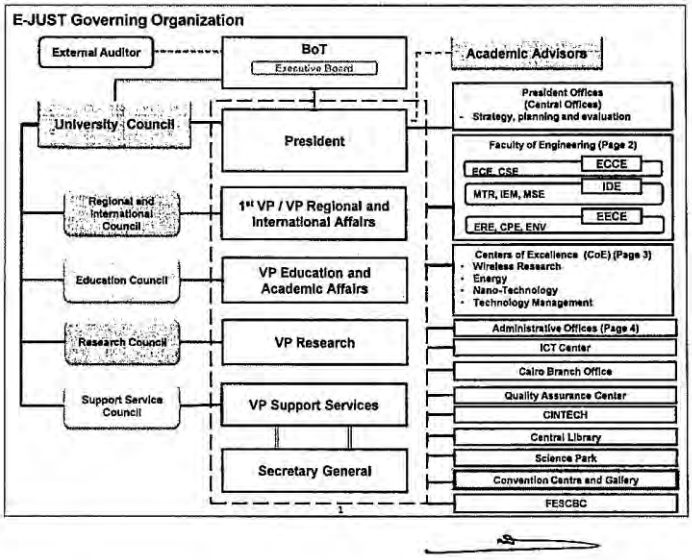
E-JUST

الجامعة المصرية اليابانية للعلوم والتكنولوجيا
EGYPT-JAPAN UNIVERSITY OF SCIENCE AND TECHNOLOGY
エジプト日本科学技術大学

EJUST
Organization Structure

Approved by 11th BOT meeting
May 19th, 2015

جامعة بحثية مصرية .. ذات شراكة يابانية
EGYPTIAN RESEARCH-ORIENTED UNIVERSITY
WITH JAPANESE PARTNERSHIP
www.ejust.edu.eg



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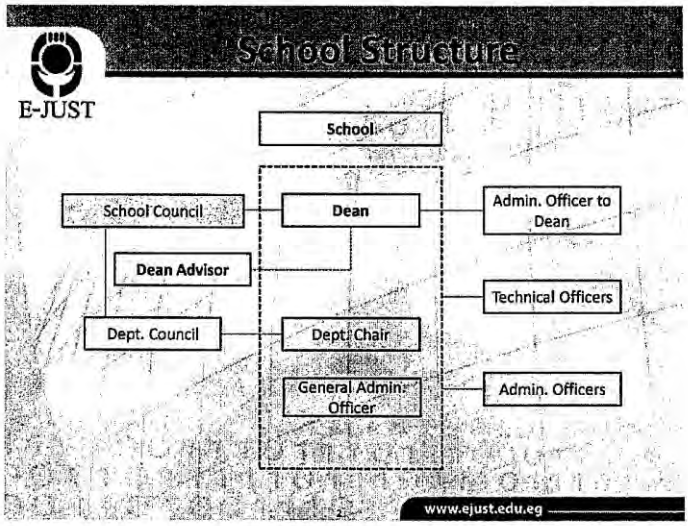
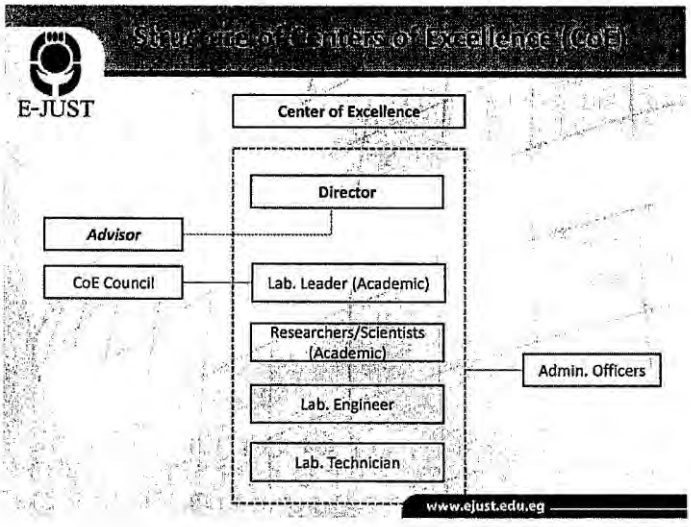
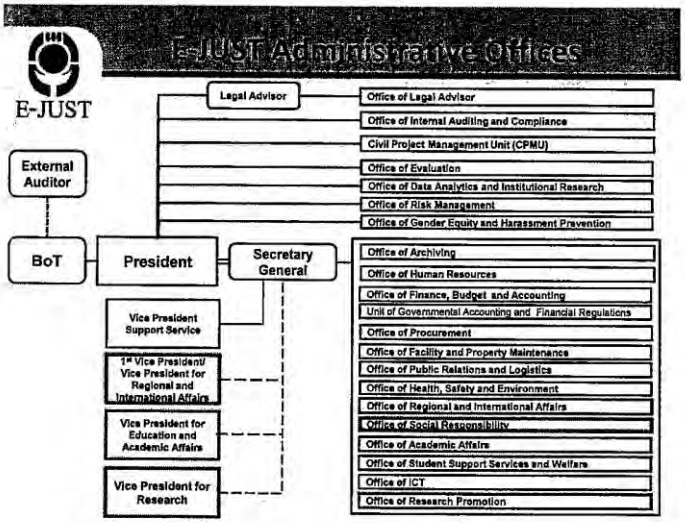
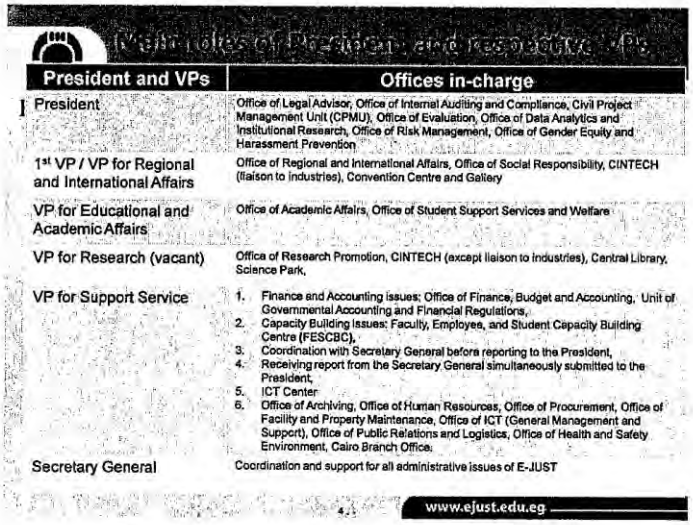

School Structure
E-JUST
School
School Council
Dean
Admin. Officer to Dean
Dean Advisor
Technical Officers
Dept. Council
Dept. Chair
General Admin. Officer
Admin. Officers
www.ejust.edu.eg


Structure of Centers of Excellence (CoE)
E-JUST
Center of Excellence
Director
Advisor
CoE Council
Lab. Leader (Academic)
Researchers/Scientists (Academic)
Admin. Officers
Lab. Engineer
Lab. Technician
www.ejust.edu.eg


E-JUST Administrative Offices
E-JUST
External Auditor
BoT
President
Secretary General
Legal Advisor
Office of Legal Advisor
Office of Internal Auditing and Compliance
Civil Project Management Unit (CPMU)
Office of Evaluation
Office of Data Analytics and Institutional Research
Office of Risk Management
Office of Gender Equity and Harassment Prevention
Office of Archiving
Office of Human Resources
Office of Finance, Budget and Accounting
Unit of Governmental Accounting and Financial Regulations
Office of Procurement
Office of Facility and Property Maintenance
Office of Public Relations and Logistics
Office of Health, Safety and Environment
Office of Regional and International Affairs
Office of Social Responsibility
Office of Academic Affairs
Office of Student Support Services and Welfare
Office of ICT
Office of Research Promotion
Vice President Support Service
1st Vice President/ Vice President for Regional and International Affairs
Vice President for Education and Academic Affairs
Vice President for Research


Main roles of President and respective VPs
President and VPs
Offices in-charge
President
Office of Legal Advisor, Office of Internal Auditing and Compliance, Civil Project Management Unit (CPMU), Office of Evaluation, Office of Data Analytics and Institutional Research, Office of Risk Management, Office of Gender Equity and Harassment Prevention
1st VP / VP for Regional and International Affairs
Office of Regional and International Affairs, Office of Social Responsibility, CINTECH (liaison to industries), Convention Centre and Gallery
VP for Educational and Academic Affairs
Office of Academic Affairs, Office of Student Support Services and Welfare
VP for Research (vacant)
Office of Research Promotion, CINTECH (except liaison to industries), Central Library, Science Park,
VP for Support Service
1. Finance and Accounting issues: Office of Finance, Budget and Accounting, Unit of Governmental Accounting and Financial Regulations,
2. Capacity Building issues: Faculty, Employee, and Student Capacity Building Centre (FESCBC),
3. Coordination with Secretary General before reporting to the President,
4. Receiving report from the Secretary General simultaneously submitted to the President,
5. ICT Center
6. Office of Archiving, Office of Human Resources, Office of Procurement, Office of Facility and Property Maintenance, Office of ICT (General Management and Support), Office of Public Relations and Logistics, Office of Health and Safety Environment, Cairo Branch Office.
Secretary General
Coordination and support for all administrative issues of E-JUST
www.ejust.edu.eg

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Annex 3.

Equipment List and Amount

No	Laboratory Name	Amount	Page
1	PHY GIA Physics Lab1	$753,060	1
2	PHY GIA Physics Lab2	$367,545	2
3	Computer Graphics lab	$304,988	3
4	Basic Engineering Materials Science	$1,229,640	4
5	Basic Engineering 1(ECE)	$386,640	5
	Basic Engineering (ERE)	$682,701	6
6	Basic Engineering 2(ECE)	$317,760	9
	Basic Engineering2 (ERE)	$689,294	10
7	Electronics Circuits	$775,323	13
8	Workshop-1	$681,960	15
9	Monotsukuri	$500,000	18
10	Workshop2	$1,142,000	19
11	Drawing Studio	$0	-
12	Automatic Control Lab	$522,000	21
13	Vibration Lab	$459,000	22
14	Electronics lab	$85,000	23
15	Microprocessor Lab	$260,820	24
16	ECE Simulation Lab	$210,959	25
17	Data Comm Network Lab	$226,923	26
18	Digital Systems Lab	$235,200	27
19	ECE Graduation Labo	$242,105	28
20	Unit Operation Lab	$962,353	30
21	Environmental Lab	$472,446	32
22	PBL CEE Labo	$57,104	35
23	Instrumentation Lab	$682,800	36
24	CEE Instrumentation	$582,313	38
25	IME_IE Application lab	$222,635	40
26	Cad lab	$265,534	42
27	Motion analysis lab	$182,000	44
28	Manufacturing Laab	$640,000	45
29	Ergonomics Lab	$414,516	46
30	ICM Lab	$707,527	48
31	Precision measurements Labo	$707,527	49
32	Sensor and Actuator	$262,100	52
33	Robotics and Mechatronics	$1,363,135	53
34	Materials Characterization	$553,400	55

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35	Materials Processing	$383,240	56
36	Advanced Electronics	$123,820	57
37	Communication	$293,828	58
38	Optical Comm	$431,042	59
39	Solid State	$66,780	60
40	RF-Circuits	$877,513	61
40	Power electronics and machines	$332,608	63
41	Antenna and Microwave	$761,614	64
42	DSP lab	$186,653	65
43	Cyber Physical system	$92,752	66
44	Clud Computing	$102,645	68
45	Physical chemistry and reaction kinetics and catalsis lab	$378,283	69
46	Inorganic Organic and petrochemical technology	$343,486	70
47	Corrosion and electrochemistry	$333,503	72
48	Process control lab	$395,878	73
49	Renewalbe Lab	$181,381	75
50	Fuel Lab	$80,742	76
51	Thermofuluids Laboratory	$136,083	77
52	Alternative Laboratory	$90,000	78
53	Wind Mils Lab	$1,050,000	79
54	Supercomputer lab	$500,000	80
55	IME Digital manufacturing	$1,417,850	81
56	Nano lab	$445,950	82
57	MEMS lab icon	$777,000	84
58	GIA Equipment Icon	$1,030,000	85
	Total	$28,761,239	

Undergraduate Engineering Laboratories (V3-13/7/2014) – Values in 1000 US$

Dept	Modern Mechanical Engineering			Electrical and Computer		Chemical and Energy	
Track	Industrial & Manufacturing	Mechatronics	Material Science	Electrical	Computer	Chemical	Energy
ICON Equipment	(53) Wind Mills			(57) MEMS lab			
	(54) Super Computer			(58) UC lab			
	(55) Digital Manufacturing Lab						
	(56) Nano Technology Lab						
Hum	English Language Lab						
	Japanese Language Lab						
Basic Science	Basic Sciences Lab -1 (01)						
	Basic Science Lab – 2 (02)						
	Computer Programming. Lab + computer Graphics (03)						
	Materials Science lab (04)						
Basic Engineering	Basic Engineering Lab-1 (05)						
	Basic Engineering Lab-2 (06)						
	Electronic Circuits lab (07)						
	Mechanical Workshop 1 ($08)						
	Drawing Studios (11)						
	Mechanical Workshop 2 (10)						
App				Electronics (14)	Data Com (17)	Unit Operation lab ($971)	

<table>
<tr><td>Dept</td><td colspan="3">Modern Mechanical Engineering</td><td colspan="2">Electrical and Computer</td><td colspan="2">Chemical and Energy</td></tr>
<tr><td>Track</td><td>Industrial & Manufacturing</td><td>Mechatronics</td><td>Material Science</td><td>Electrical</td><td>Computer</td><td>Chemical</td><td>Energy</td></tr>
<tr><td rowspan="4"></td><td colspan="3">Automatic Control Lab (12)</td><td>Microprocessor (15)</td><td>Digital Systems (18)</td><td colspan="2">CEE ENV lab ($472)</td></tr>
<tr><td colspan="3">Mechanical Vibrations Lab (13)</td><td>Simulation software (16)</td><td>Grad Project (19)</td><td colspan="2">PBL ($295)</td></tr>
<tr><td colspan="6">Instrumentation Lab (based on the ECE Instrumentation lab) (23)
Instrumentation Lab (based on the CEE Instrumentation lab) (24)</td></tr>
<tr><td colspan="6">MONOTSUKURI Center (09)</td></tr>
<tr><td rowspan="10">Track</td><td>IEM Applications Lab (25)</td><td rowspan="2"></td><td rowspan="6">MSE-Materials Testing and characterization lab. (34)</td><td>Advanced Electronics (36)</td><td rowspan="5">Cyber Physical Systems (43)</td><td rowspan="2">Physical Chemistry (45)</td><td rowspan="2">Renewable Energy (49)</td></tr>
<tr><td>CAD RE Lab (26)</td><td rowspan="3">Sensors and actuators Lab (32)</td><td rowspan="2">Communications (37)</td></tr>
<tr><td>Motion Analysis (27)</td><td rowspan="2">Organic and Inorganic (46)</td><td rowspan="2">Fuel (50)</td></tr>
<tr><td>Manufacturing Lab (28)</td><td>Optical Comm (38)</td></tr>
<tr><td>Ergonomics Lab (29)</td><td rowspan="3"></td><td>Solid State (39)</td></tr>
<tr><td>CIM Lab (30)</td><td rowspan="3">Mechatronics and Robotics Lab (33)</td><td rowspan="3">MSE-Materials Processing Lab. (35)</td><td>RF Circuits (40)</td><td rowspan="3">Cloud Computing (44)</td><td rowspan="2">Corrosion and electrochemistry (47)</td><td rowspan="2">Thermo-fluids (51)</td></tr>
<tr><td>Power Electronics (40)</td></tr>
<tr><td>Precision Engineering (31)</td><td>Microwave & Antenna (41)</td></tr>
<tr><td></td><td></td><td></td><td>DSP (42)</td><td></td><td>Process Control (48)</td><td>Alternative Energy (52)</td></tr>
</table>

JAPANESE GRANT

The Japanese Grant (hereinafter referred to as the "Grant") is non-reimbursable fund provided to a recipient country to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. The Grant is not supplied through the donation of materials as such.
Based on a JICA law which was entered into effect on October 1, 2008 and the decision of the GOJ, JICA has become the executing agency of the Japanese Grant for Projects for construction of facilities, purchase of equipment, etc.

1. Grant Procedures

The Grant is supplied through following procedures :

- Preparatory Survey
  - The Survey conducted by JICA
- Appraisal &Approval
  - -Appraisal by the GOJ and JICA, and Approval by the Japanese Cabinet
- Authority for Determining Implementation
  - -The Notes exchanged between the GOJ and a recipient country
- Grant Agreement (hereinafter referred to as "the G/A")
  - -Agreement concluded between JICA and a recipient country
- Implementation
  - -Implementation of the Project on the basis of the G/A

2. Preparatory Survey

(1) Contents of the Survey

The aim of the preparatory Survey is to provide a basic document necessary for the appraisal of the Project made by the GOJ and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of relevant agencies of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.
- Preparation of an outline design of the Project.

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- Estimation of costs of the Project.

The contents of the original request by the recipient country are not necessarily approved in their initial form as the contents of the Grant project. The Outline Design of the Project is confirmed based on the guidelines of the Japanese Grant scheme.

JICA requests the Government of the recipient country to take whatever measures necessary to achieve its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization of the recipient country which actually implements the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country based on the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Survey, JICA employs (a) consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

(3) Result of the Survey

JICA reviews the Report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the appropriateness of the Project.

3. Japanese Grant Scheme

(1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes(hereinafter referred to as "the E/N") will be singed between the GOJ and the Government of the recipient country to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the recipient country to define the necessary articles, in accordance with the E/N, to implement the Project, such as payment conditions, responsibilities of the Government of the recipient country, and procurement conditions.

(2) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the recipient country to continue to work on the Project's implementation after the E/N and G/A.

(3) Eligible source country

Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are

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to be purchased. The Grant may be used for the purchase of the products or services of a third country, if necessary, taking into account the quality, competitiveness and economic rationality of products and services necessary for achieving the objective of the Project. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals", in principle.

(4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals, in principle. Those contracts shall be verified by JICA. This "Verification" is deemed necessary to fulfill accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Project, the recipient country is required to undertake such necessary measures as Annex. The Japanese Government requests the Government of the recipient country to exempt all customs duties, internal taxes and other fiscal levies such as VAT, commercial tax, income tax, corporate tax, resident tax, fuel tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract, since the Grant fund comes from the Japanese taxpayers.

(6) "Proper Use"

The Government of the recipient country is required to maintain and use properly and effectively the facilities constructed and the equipment purchased under the Grant, to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Grant.

(7) "Export and Re-export"

The products purchased under the Grant should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account under the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"), in principle. JICA will execute the Grant by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment

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commissions paid to the Bank.

(10) Environmental and Social Considerations

The Government of the recipient country must carefully consider environmental and social impacts by the Project and must comply with the environmental regulations of the recipient country and JICA Guidelines for Environmental and Social Consideration (April, 2010).

(11) Monitoring

The Government of the recipient country must take their initiative to carefully monitor the progress of the Project in order to ensure its smooth implementation as part of their responsibility in the G/A, and must regularly report to JICA about its status by using the Project Monitoring Report (PMR).

(12) Safety Measures

The Government of the recipient country must ensure that the safety is highly observed during the implementation of the Project.

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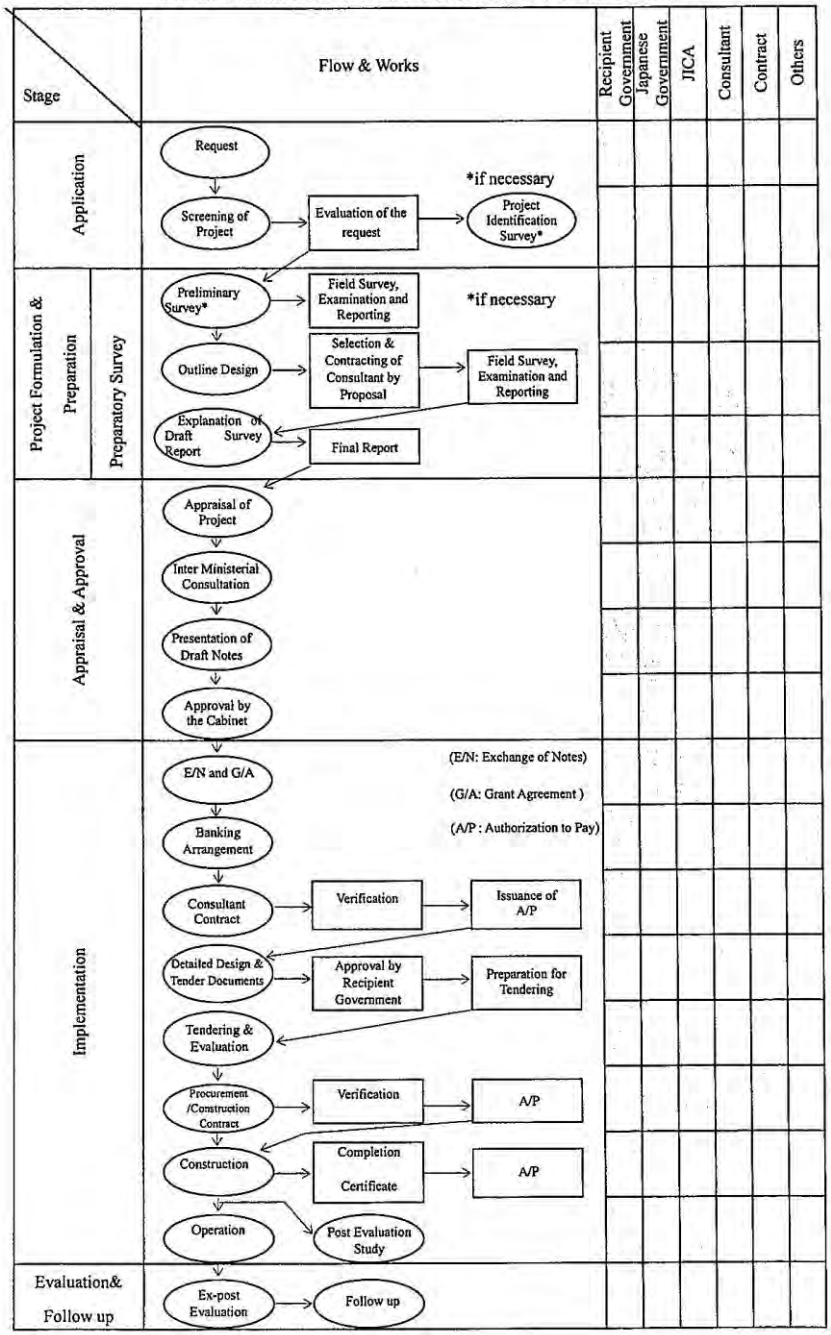
Annex 5

FLOW CHART OF JAPANESE GRANT PROCEDURES



Financial Flow of Grant Aid

Annex 7

Major Undertakings to be taken by Recipient Government

1. Before the Tender

NO	Items	Deadline	In charge	Cost	Ref.
1	To secure land acquisition	July, 2015	E-JUST		
2	To apply the establishment of undergraduate programs of the engineering faculty to Supreme Council of University (SCU)	December, 2015	E-JUST		
3	To open Bank Account (Banking Arrangement (B/A))	within 1 month after G/A	E-JUST		

2. During the Project Implementation

NO	Items	Deadline	In charge	Cost	Ref.
1	To obtain the official permission to establish the undergraduate program of the engineering faculty	April 2016	MoHE		
2	To complete basic infrastructure of E-JUST campus construction	November 2016	E-JUST		
3	To complete building construction (phase 1) of E-JUST campus construction	June 2017	E-JUST		
4	To bear the following commissions to a bank of Japan for the banking services based upon the B/A				
	1) Advising commission of A/P	within 1 month after the singing of the contract			
	2) Payment commission for A/P	every payment			
5	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country				
	1) Tax exemption and customs clearance of the products at the port of disembarkation	during the Project	E-JUST		
6	To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work	during the Project	E-JUST		
7	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the Products and/or the Services be exempted.	during the Project	E-JUST MoF MoIC		
8	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment	during the Project	E-JUST		
9	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities				
	1) Electricity The distributing line to the site	before start of the installation	E-JUST		
	2) Water Supply The city water distribution main to the site	6 months before completion of the installation	E-JUST		

M.A

	3) Drainage The city drainage main (for storm, sewer and others) to the site	6 months before completion of the installation	E-JUST		
	4) Furniture and Equipment General furniture	1 month before completion of the installation	E-JUST		
	Special furniture (i.e. Laboratory Table)	1 month before completion of the construction	E-JUST		

3. After the Project

NO	Items	Deadline	In charge	Cost	Ref.
1	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid 1) Allocation of maintenance cost 2) Operation and maintenance structure 3) Routine check/Periodic inspection	After completion of the construction	E-JUST		

(B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable)

M.A

Annex 8

Schedule for the Commencement of the Undergraduate Program of the Faculty of Engineering

Year	Month	Target
2013	May	First joint workshop on Undergraduate (UG) program development
2014	May	UG program task force was formed
2015	May	The outline of UG program has been reported in the 11th BOT Meeting
	August	First workshop with the Head of Sector of Engineering, Supreme Council of Universities (SCU)
	November	Second Workshop with the Head of Sector of Engineering, SCU
	December	The progress of the UG Program preparation will be reported to the 12th BOT Meeting
	December	Submission of the application of the UG Program to SCU (including curriculum, syllabus, course profile, ILO, assessment, teaching methodologies, the number of academic staff, schematic drawing and so on)
2016	March	Feedback from SCU to E-JUST, Answers by E-JUST to SCU
	April	Final Approval by SCU and to submit the recommendation to Ministry of Higher Education and Scientific Research (MoHE)
	June	Ministerial endorsement by MoHE to support issuing the Prime Minister's decree to launch of the UG Program (the BOT chair send the request letter to the Prime Minister Office)
2017	April	Field visit and discussion in E-JUST by the SCU committees

M - A

PROPOSED STUDY PLAN FOR THE Chemical and Petrochemical Engineering Program CPE - Version 7.4

140 CRED TS – 4 years

		Fall	Cr. Hrs	Lec	Tut	Lab	Tot		Spring	Cr. Hrs	Lec.	Tut	Lab	Tot
First Year	HUM 101	Safety and Risk Management	2	2	-	-	2	HUM 103	Japanese Language (1) [Non Credit]	-	2	-	-	2
	HUM 102	English Language (non-credit)	-	2	-	-	2	HUM 104	Technical Report Writing	2	2	-	-	2
	MTH 101	Mathematics (1)	3	2	2	-	4	HUM 105	Communications, Presentations and Soft Skills	2	2	-	-	2
	PHY 101	Physics (1)	3	2	2	-	4	CHM 101	Chemistry (1)	3	2	2	-	4
	MCE 101	Mechanics (Statics + dynamics)	3	2	2	-	4	CSE 101	Computer Programming	3	2	-	2	4
	PHY 102	Basic Sciences Lab -1 (Physics 1)	2	-	-	4	4	MSE 101	Fundamentals of Materials Science(Prop+test)	3	2	2	-	4
	IME 101	Engineering Drawing	3	2	1	1	4	CHM 102	Basic Sciences Lab -2 (Chemistry + material)	2	-	-	4	4
								IME 102	Introduction to Manufacturing Processes	3	2	1	1	4
		Total	16	12	5	7	24		Total	18	14	5	7	26
Second Year	HUM 201	Japanese Language (2) [Non Credit]	-	2	-	-	2	HUM 2xx	Humanities elective 1	2	2	-	-	2
	HUM 202	Engineering ethics and Laws	2	2	-	-	4	HUM 203	Engineering Economy	2	2	-	-	2
	MTH 201	Mathematics (2)	3	2	2	-	4	MTH 202	Probability and Statistics	3	2	2	-	4
	EPE 201	Measurements and Instrumentations	3	2	2	-	4	CSE 201	Computing and Networking	2	2	-	-	2
	EPE 202	Electrical Engineering (circuits + machines)	3	2	2	-	4	CPE 201	Introduction to Energy, Environmental and Chemical Eng.	3	3	-	-	3
	ERE 201	Thermo-fluids	3	2	1	1	4	ECE 201	Introduction to Electronics Engineering	3	2	1	1	4
	EPE 203	Basic Engineering Lab-1 (electrical + instrument)	3	-	-	6	4	CPE 202	Basic Engineering Lab-2 (Chemical + energy + env engg)	3	-	-	6	6
		Total	17	12	7	7	26		Total	18	13	3	7	23
	HUM 311	Humanities elective 1	2	2	-	-	2	HUM 322	Humanities elective 2	2	2	-	-	2
	CPE301	Material balance and Mass Transfer	3	2	2	-	4	CPE 307	Chemical Process Technologies II(Gas and Petrochemical)	3	2	1	1	4
	CPE302	Heat transfer and Fluid mechanics	3	2	1	1	4	CPE 308	Project Based Learning on CPE	2	-	-	4	4
	CPE E 303	Thermodynamics for chemical eng.	3	2	2	-	4	CPE 309	Clean Production and Sustainable	2	2	-	-	2
	CPE 304	Corrosion and Electrochemical Eng.	2	-	-	4	4	CPE 310	Separation Processes	3	2	1	1	4
	CPE 305	Chemical Process Technologies I(Inorg/Org.)	3	2	1	1	4	CPE 311	Chemical Reaction Kinetics	4	2	2	2	6
	CPE 306	Principles of Chemical Engineering Practice	3	2	2	-	4	CPE 3XX	Elective I	3	2	-	2	4
		Total	19	10	6+	10+	25		Total	19	15	4	6	25
									Industrial Training (Compulsory, Non credit)					
Fourth Year	HUM 413	Humanities elective 3	2	2	-	-	2	HUM 424	Humanities elective 4	2	2	-	-	2
	CPE 4XX	Elective 2	3	2			4	CPE 4XX	Elective 4	3	2			4
	I CPE 4XX	Elective 3	3	2			4	CPE 403	Chemical process control	3	2			4
	CPE 401	Unit operations Laboratory	3	2	2	2	5	CPE 404	Plant design and Process Simulation	3	2	1	1	4
	CPE 402	Chemical Process Modeling	3	2	1	1	4	CPE 405	Senior Project Thesis	4	1	-	6	7
	CPE 405	Senior Project Thesis (6 Credits)	4	1	-	6	7							
		Total	18	11	3+	9+	26		Total	15	9	1+	7+	21
			Tota %	Target % Tolerance		Proposed				Total	Target %Tolerance		Proposed	
	A	Humanities and social sciences (Univ req.)	14	14 - 18		20/140=14		D	Basic engineering (specialization)	46	48 - 60		25/140 = 19	
	B	Math and Basic Science (faculty req.)	40	28 - 35		28/140=20		E	Applied Engineering and Design (specialization)				38/140 = 27	
	C	Basic Engineering (faculty req.)				29/140=20								

PROPOSED STUDY PLAN FOR THE Electrical Engineering Program CSE - Version 7.2 – revised %
(Electronics and Communications engineering Major) 140 CREDITS – 4 years

		Fall	Cr. Hrs	Lec.	Tut	Lab	Tot		Spring	Cr. Hrs	Lec.	Tut	Lab	Tot
First Year														
Second Year														
		Total	17	12	7	7	26		Total	16	13	3	7	23
Third Year	HUM 311	Humanities elective 2	2	2	-	-	2	HUM 322	Project Management	2	2	-	-	2
	CSE 301	Programming (2)	3	2	1	1	4	CSE 305	Theory of Computation	3	2	1	1	4
	CSE 302	Discrete Structures	3	2	1	1	4	CSE 306	Computer Organisation	3	2	1	1	4
	ECE 311	Signals and Systems	3	2	1	1	4	EPC	Seminar on EPC	2	2	-	-	2
	ECE 303	Digital Systems Fundamentals	3	2	1	1	4	CSE 307	Embedded Systems	3	2	1	1	4
	CSE 304	Numerical Analysis	3	2	1	1	4	CSE 308	Algorithms and Complexity	3	2	1	1	4
	EPC	Project Based Learning on EPC	2	-	-	4	4	CSE 309	Parallel and Distributed Computing	3	2	1	1	4
		Total	19	12	5	9	26		Total	19	14	5	5	24
									Industrial Training (Compulsory, Non credit)					
Fourth Year	HUM 413	Humanities elective 3	2	2	-	-	2	HUM 425	Entrepreneurial Leadership	2	2			2
	CSE 401	Operating Systems	3	2	1	1	4	CSE 404	Software Engineering	3	2	1	1	4
	CSE 402	Computer Networks	3	2	1	1	4	CSE 4–	Elective 3	3	2	1	1	4
	CSE 4–	Elective 1	3	2	1	1	4	CSE 4–	Elective 4	3	2	1	1	4
	CSE 4–	Elective 2	3	2	1	1	4	CSE 403	Senior Project Thesis	4	1	-	6	7
	CSE 403	Senior Project Thesis (8 Credits)	4	1	-	6	7							
		Total	18	11	4	10	25		Total	15	9	3	9	21
			Total%	Target % Tolerance		Proposed				Total	Target %Tolerance		Proposed	
	A	Humanities and social sciences (Univ req.)	14	14 - 18		20/140=14		D	Basic engineering (specialization)	17	48 - 60		25/140 = 18	
	B	Math and Basic Science (faculty req.)	40	28 - 35		28/140=20		E	Applied Engineering and Design (specialization)	29			38/140 = 27	
	C	Basic Engineering (faculty req.)				29/140=20								

PROPOSED STUDY PLAN FOR THE Electronics and Communications Engineering Program ECE - Version 7.4

(Electronics and Communications Engineering Major) 140 CREDITS – 4 years

		Fall	Cr. Hrs	Lec.	Tut	Lab	Tot		Spring	Cr. Hrs	Lec.	Tut	Lab	Tot
First Year	HUM 101	Safety and Risk Management	2	2	-	-	2	HUM 103	Japanese Language (1) [Non Credit]	-	2	-	-	2
	HUM 102	English Language (non-credit)	-	2	-	-	2	HUM 104	Technical Report Writing	2	2	-	-	2
	MTH 101	Mathematics (1)	3	2	2	-	4	HUM 105	Communications, Presentations and Soft Skills	2	2	-	-	2
	PHY 101	Physics (1)	3	2	2	-	4	CHM 101	Chemistry (1)	3	2	2	-	4
	MCE 101	Mechanics (Statics + dynamics)	3	2	2	-	4	CSE 101	Computer Programming	3	2	-	2	4
	PHY 102	Basic Sciences Lab -1 (Physics 1)	2	-	-	4	4	MSE 101	Fundamentals of Materials Science(Prop+test)	3	2	2	-	4
	IME 101	Engineering Drawing	3	2	1	1	4	CHM 102	Basic Sciences Lab -2 (Chemistry + material)	2	-	-	4	4
								IME 102	Introduction to Manufacturing Processes	3	2	1	1	4
		Total	16	12	5	7	24		Total	18	14	5	7	26
Second Year	HUM 201	Japanese Language (2) [Non Credit]	-	2	-	-	2	HUM 2xx	Humanities elective 1	2	2	-	-	2
	HUM 202	Engineering ethics and Laws	2	2	-	-	4	HUM 203	Engineering Economy	2	2	-	-	2
	MTH 201	Mathematics (2)	3	2	2	-	4	MTH 202	Probability and Statistics	3	2	2	-	4
	EPE 201	Measurements and Instrumentations	3	2	2	-	4	CSE 201	Computing and Networking	2	2	-	-	2
	EPE 202	Electrical Engineering (circuits + machines)	3	2	2	-	4	CPE 201	Introduction to Energy, Environmental and Chemical Eng.	3	3	-	-	3
	ERE 201	Thermo-fluids	3	2	1	1	4	ECE 201	Introduction to Electronics Engineering	3	2	1	1	4
	EPE 203	Basic Engineering Lab-1 (electrical + Instrument)	3	-	-	6	4	CPE 202	Basic Engineering Lab-2 (Chemical + energy + env engg)	3	-	-	6	6
		Total	17	12	7	7	26		Total	18	13	3	7	23
third Year	HUM 3xx	Humanities elective 2	2	2	-	-	2	HUM 301	Project Management	2	2	-	-	2
	MTH 301	Advanced Mathematics	3	2	2	-	4	ECE 305	Electronic Circuits	3	2	1	1	4
	ECE 301	Electric Circuits	3	2	1	1	4	CSE 302	Computer Organization	3	2	1	1	4
	ECE 302	Signals and Systems	3	2	1	1	4	ECE 306	Seminar on ECE	2	2	-	-	2
	CSE 301	Digital Systems Fundamentals	3	2	1	1	4	ECE 307	Communications Systems Fundamentals	3	2	1	1	4
	ECE 303	Solid State Electronics	3	2	1	1	4	ECE 308	Engineering Electromagnetics	3	2	1	1	4
	ECE 304	Project Based Learning on ECE	2	-	-	4	4	ECE 309	Digital Signal Processing	3	2	1	1	4
		Total	19	12	6	8	25		Total	15	14	5	5	24
									Industrial Training (Compulsory, Non credit)					
Fourth Year	HUM 4xx	Humanities elective 3	2	2	-	-	2	HUM 401	Entrepreneurial Leadership	2	2	-	-	2
	ECE 401	Electromagnetic Fields and Waves	3	2	1	1	4	ECE 4xx	Elective 2	3	2	1	1	4
	ECE 402	Digital Communications Systems	3	2	1	1	4	ECE 4xx	Elective 3	3	2	1	1	4
	ECE 403	Optical Communications Devices	3	2	1	1	4	ECE 4xx	Elective 4	3	2	1	1	4
	ECE 4xx	Elective 1	3	2	1	1	4	ECE 405	Senior Project Thesis	4	1	-	6	7
	ECE 404	Senior Project Thesis (6 Credits)	4	1	-	6	7							
		Total	18	11	4	10	25		Total	15	9	3	9	21
			Total%	Target % Tolerance		Proposed				Tota	Target %Tolerance		Proposed	
	A	Humanities and social sciences (Univ req.)	14	14 - 18		20/140=14		D	Basic engineering (specialization)	17	48 - 60		25/140 = 18	
	B	Math and Basic Science (faculty req.)	40	28 - 35		28/140=20		E	Applied Engineering and Design (specialization)	29			38/140 = 27	
	C	Basic Engineering (faculty req.)				29/140=20								

PROPOSED STUDY PLAN FOR THE Electrical Power Engineering Program EPE - Version 7.4

(Electrical Power Engineering Major) 140 CREDITS – 4 years

		Fall	Cr. Hrs	Lec.	Tut	Lab	Tot		Spring	Cr. Hrs	Lec.	Tut	Lab	Tot
First Year	HUM 101	Safety and Risk Management	2	2	-	-	2	HUM 103	Japanese Language (1) [Non Credit]	-	2	-	-	2
	HUM 102	English Language (non-credit)	-	2	-	-	2	HUM 104	Technical Report Writing	2	2	-	-	2
	MTH 101	Mathematics (1)	3	2	2	-	4	HUM 105	Communications, Presentations and Soft Skills	2	2	-	-	2
	PHY 101	Physics (1)	3	2	2	-	4	CHM 101	Chemistry (1)	3	2	2	-	4
	MCE 101	Mechanics (Statics + dynamics)	3	2	2	-	4	CSE 101	Computer Programming	3	2	-	2	4
	PHY 102	Basic Sciences Lab -1 (Physics 1)	2	-	-	4	4	MSE 101	Fundamentals of Materials Science(Prop+test)	3	2	2	-	4
	IME 101	Engineering Drawing	3	2	1	1	4	CHM 102	Basic Sciences Lab -2 (Chemistry + material)	2	-	-	4	4
								IME 102	Introduction to Manufacturing Processes	3	2	1	1	4
		Total	16	12	5	7	28		Total	18	14	5	7	26
Second Year	HUM 201	Japanese Language (2) [Non Credit]	-	2	-	-	2	HUM 2xx	Humanities elective 1	2	2	-	-	2
	HUM 202	Engineering ethics and Laws	2	2	-	-	4	HUM 203	Engineering Economy	2	2	-	-	2
	MTH 201	Mathematics (2)	3	2	2	-	4	MTH 202	Probability and Statistics	3	2	2	-	4
	EPE 201	Measurements and Instrumentations	3	2	2	-	4	CSE 201	Computing and Networking	2	2	-	-	2
	EPE 202	Electrical Engineering (circuits + machines)	3	2	2	-	4	CPE 201	Introduction to Energy, Environmental and Chemical Eng.	3	3	-	-	3
	ERE 201	Thermo-fluids	3	2	1	1	4	ECE 201	Introduction to Electronics Engineering	3	2	1	1	4
	EPE 203	Basic Engineering Lab-1 (electrical + instrument)	3	-	-	6	4	CPE 202	Basic Engineering Lab-2 (Chemical + energy + env engg)	3	-	-	6	6
		Total	17	12	7	7	28		Total	18	13	3	7	23
third Year	HUM 3xx	Humanities elective 2	2	2	-	-	2	HUM 301	Project Management	2	2	-	-	2
		Advanced Mathematics	3	2	2	-	4	ECE 305	Electronic Circuits	3	2	1	1	4
	ECE 302	Electric Circuits	3	2	1	1	4	MTR 301	Automatic Control (1)	3	2	1	1	4
	ECE 303	Signals and Systems	3	2	1	1	4	EPE 307	Seminar on EPE	2	2	-	-	2
	CSE 301	Digital Systems Fundamentals	3	2	1	1	4	EPE 308	Electrical machines (1)	3	2	1	1	4
	CSE 302	Electromechanical Energy Conversion	3	2	1	1	4	ECE 309	Engineering Electromagnetics	3	2	1	1	4
	EPE 304	Project Based Learning on EPE	2	-	-	4	4	EPE 310	Switch Gear and Protection Systems	3	2	1	1	4
		Total	19	12	6	8	26		Total	19	14	5	5	24
									Industrial Training (Compulsory, Non credit)					
Fourth Year	HUM 4xx	Humanities elective 3	2	2	-	-	2	HUM 401	Entrepreneurial Leadership	2	2	-	-	2
	EPE 401	Power System Analysis (1)	3	2	1	1	4	EPE 403	Power System Analysis (2)	3	2	1	1	4
	EPE 402	Power Electronics (1)	3	2	1	1	4	EPE 4xx	Elective 3	3	2	1	1	4
	EPE 4xx	Elective 1	3	2	1	1	4	EPE 4xx	Elective 4	3	2	1	1	4
	EPE 4xx	Elective 2	3	2	1	1	4	EPE 420	Senior Project Thesis	4	1	-	6	7
	EPE 410	Senior Project Thesis (8 Credits)	4	1	-	6	7							
		Total	18	11	4	10	25		Total	16	9	3	9	21
			Total%	Target % Tolerance		Proposed				Total	Target %Tolerance		Proposed	
	A	Humanities and social sciences (Univ req.)	14	14 - 18		20/140=14		D	Basic engineering (specialization)	17	48 - 60		25/140 = 18	
	B	Math and Basic Science (faculty req.)	40	28 - 35		28/140=20		E	Applied Engineering and Design (specialization)	29			38/140 = 27	
	C	Basic Engineering (faculty req.)				29/140=20								

PROPOSED STUDY PLAN FOR THE Energy Resources Engineering Program ERE - Version 7.4

140 CREDITS – 4 years

		Fall	Cr. Hrs	Lec.	Tut	Lab	Tot		Spring	Cr. Hrs	Lec.	Tut	Lab	Tot
First Year	HUM 101	Safety and Risk Management	2	2	-	-	2	HUM 103	Japanese Language (1) [Non Credit]	-	2	-	-	2
	HUM 102	English Language (non-credit)	-	2	-	-	2	HUM 104	Technical Report Writing	2	2	-	-	2
	MTH 101	Mathematics (1)	3	2	2	-	4	HUM 105	Communications, Presentations and Soft Skills	2	2	-	-	2
	PHY 101	Physics (1)	3	2	2	-	4	CHM 101	Chemistry (1)	3	2	2	-	4
	MCE 101	Mechanics (Statics + dynamics)	3	2	2	-	4	CSE 101	Computer Programming	3	2	-	2	4
	PHY 102	Basic Sciences Lab -1 (Physics 1)	2	-	-	4	4	MSE 101	Fundamentals of Materials Science(Prop+test)	3	2	2	-	4
	IME 101	Engineering Drawing	3	2	1	1	4	CHM 102	Basic Sciences Lab -2 (Chemistry + material)	2	-	-	4	4
								IME 102	Introduction to Manufacturing Processes	3	2	1	1	4
		Total	16	12	7	5	24		Total	18	14	5	7	26
Second Year	HUM 201	Japanese Language (2) [Non Credit]	-	2	-	-	2	HUM 2xx	Humanities elective 1	2	2	-	-	2
	HUM 202	Engineering ethics and Laws	2	2	-	-	4	HUM 203	Engineering Economy	2	2	-	-	2
	MTH 201	Mathematics (2)	3	2	2	-	4	MTH 202	Probability and Statistics	3	2	2	-	4
	EPE 201	Measurements and Instrumentations	3	2	2	-	4	CSE 201	Computing and Networking	2	2	-	-	2
	EPE 202	Electrical Engineering (circuits + machines)	3	2	2	-	4	CPE 201	Introduction to Energy, Environmental and Chemical Eng.	3	3	-	-	3
	ERE 201	Thermo-fluids	3	2	1	1	4	ECE 201	Introduction to Electronics Engineering	3	2	1	1	4
	EPE 203	Basic Engineering Lab-1 (electrical + instrument)	3	-	-	6	4	CPE 202	Basic Engineering Lab-2 (Chemical + Energy + Env. Eng.)	3	-	-	6	6
		Total	17	12	7	7	26		Total	18	13	3	7	23
Third Year	HUM 3xx	Humanities elective 2	2	2	-	-	2	HUM 301	Project Management	2	2	-	-	2
	REE 310	Fluid Mechanics (2)	3	2	2	-	4	ERE 320	Combustion and Air Pollution	3	2	1	1	4
	ERE 311	Thermodynamics (2)	3	2	2	-	4	ERE 321	Energy Resources Engineering	3	2	2	-	4
	ERE 312	Heat Transfer	3	2	2	-	4	ERE 322	Project Based Learning on ERE-2	2	-	-	4	4
	ERE 313	Experimental Methods for Engineers	3	2	2	-	4	ERE 323	Refrigeration and Air Conditioning	3	2	1	1	4
	ERC 314	Computational Fluid Dynamics (CFD)	3	2	2	-	4	ERE 324	Power Stations	3	2	2	-	4
	ERE 315	Project Based Learning on ERE-1	2	-	-	4	4	ERE 325	Renewable Energy Utilization	3	2	1	1	4
		Total	19	12	10	4	26		Total	19	12	7	7	26
									Industrial Training (Compulsory, Non credit)					
Fourth Year	HUM 4xx	Humanities elective 3	2	2	-	-	2	HUM 401	Entrepreneurial Leadership	2	2	-	-	2
	ERE 411	Sustainable Energy	3	2	2	-	4	ERE 421	Energy Storage and Transmission	3	2	2	-	4
	ERE 412	Energy Conversion and Management	3	2	2	-	4	ERE 422	Elective (3)	3	2	2	-	4
	ERE 413	Elective (1)	3	2	2	-	4	ERE 423	Elective (4)	3	2	2	-	4
	ERE 414	Elective (2)	3	2	2	-	4	ERE 420	Senior Project Thesis	4	1	-	6	7
	ERE 410	Senior Project Thesis (8 Credits)	4	1	-	6	7							
		Total	18	11	8	6	25		Total	15	9	6	6	21
			Total%	Target % Tolerance		Proposed				Total	Target %Tolerance		Proposed	
	A	Humanities and social sciences (Univ req.)	14	14 - 18		20/140=14		D	Basic engineering (specialization)	46	48 - 60		25/140 ≈ 19	
	B	Math and Basic Science (faculty req.)	40	28 - 35		28/140=20		E	Applied Engineering and Design (specialization)				38/140 ≈ 27	
	C	Basic Engineering (faculty req.)				29/140=20								

PROPOSED STUDY PLAN FOR THE Mechatronics Engineering Program MTE - Version 7.4

(Mechatronics Engineering Major) 140 CREDITS – 4 years

		Fall	Cr. Hrs	Lec.	Tut	Lab	Tot		Spring	Cr. Hrs	Lec.	Tut	Lab	Tot
First Year	HUM 101	Safety and Risk Management	2	2	-	-	2	HUM 103	Japanese Language (1) [Non Credit]	-	2	-	-	2
	HUM 102	English Language (non-credit)	-	2	-	-	2	HUM 104	Technical Report Writing	2	2	-	-	2
	MTH 101	Mathematics (1)	3	2	2	-	4	HUM 105	Communications, Presentations and Soft Skills	2	2	-	-	2
	PHY 101	Physics (1)	3	2	2	-	4	CHM 101	Chemistry (1)	3	2	2	-	4
	MCE 101	Mechanics (Statics + dynamics)	3	2	2	-	4	CSE 101	Computer Programming	3	2	-	2	4
	PHY 102	Basic Sciences Lab -1 (Physics 1)	2	-	-	4	4	MSE 101	Fundamentals of Materials Science(Prop+test)	3	2	2	-	4
	IME 101	Engineering Drawing	3	2	1	1	4	CHM 102	Basic Sciences Lab -2 (Chemistry + material)	2	-	-	4	4
								IME 102	Introduction to Manufacturing Processes	3	2	1	1	4
		Total	16	12	5	7	24		Total	18	14	5	7	26
Second Year	HUM 201	Japanese Language (2) [Non Credit]	-	2	-	-	2	HUM 2xx	Humanities elective 1	2	2	-	-	2
	HUM 202	Engineering ethics and Laws	2	2	-	-	4	HUM 203	Engineering Economy	2	2	-	-	2
	MTH 201	Mathematics (2)	3	2	2	-	4	MTH 202	Probability and Statistics	3	2	2	-	4
	EPE 201	Measurements and Instrumentations	3	2	2	-	4	CSE 201	Computing and Networking	2	2	-	-	2
	EPE 202	Electrical Engineering (circuits + machines)	3	2	2	-	4	CPE 201	Introduction to Energy, Environmental and Chemical Eng.	3	3	-	-	3
	ERE 201	Thermo-fluids	3	2	1	1	4	ECE 201	Introduction to Electronics Engineering	3	2	1	1	4
	EPE 203	Basic Engineering Lab-1 (electrical + instrument)	3	-	-	6	4	CPE 202	Basic Engineering Lab-2 (Chemical + energy + env engg)	3	-	-	6	6
		Total	17	12	7	7	26		Total	18	13	3	7	23
	HUM 3xx	Humanities elective 2	2	2	-	-	2	HUM 301	Project Management	2	2	-	-	2
	MTE 311	Theory of Machines	3	2	-	2	4	MTE 321	Mechanical Vibrations	3	2	1	1	4
	MTE 312	Strength of Material	3	2	1	1	4	MTE 322	Mechanical Design (1)	3	2	2	-	4
	EPC xxx	Electronic Circuits	3	2	2	-	4	MTE 323	Seminar on MTE	2	2	-	-	2
	MTE 313	Introduction to Mechatronics	3	2	1	1	4	MTE 324	Automatic Control (1)	3	2	1	1	4
	CSE xxx	Microprocessors	3	-	-	6	6	MTE 325	Pneumatic and Hydraulic Systems	3	2	1	1	4
	IME 316	Project Based Learning on MTE	2	-	-	4	4	MTE 326	Numerical Analysis	3	2	2	-	4
		Total	19	10	4	14	28		Total	19	14	7	3	24
									Industrial Training (Compulsory Non credit)					
Fourth Year	HUM 4xx	Humanities elective 3	2	2	-	-	2	HUM 401	Entrepreneurial Leadership	2	2	-	-	2
	MTE 4xx	Elective 1:	3	2			4	MTE 4xx	Elective 2:	3	2			4
	MTE 411	Mechatronics systems design	3	2	1	1	4	MTE 4xx	Elective 3:	3	2			4
	MTE 412	Mechanical Design (2)	3	2	1	1	4	MTE 4xx	Elective 4:	3	2			4
	MTE 413	Robotics	3	2	1	1	4	MTE 420	Senior Project Thesis	4	1	-	6	7
	MTE 410	Senior Project Thesis (8 Credits)	4	1	-	6	7							
		Total	18	11	3+	9+	25		Total	15	9	0+	6+	21
			Total%	Target % Tolerance		Proposed				Total	Target %Tolerance		Proposed	
	A	Humanities and social sciences (Univ req.)	14	14 - 18		20/140=14		D	Basic engineering (specialization)	46	48 - 60		25/140 = 19	
	B	Math and Basic Science (faculty req.)	40	28 - 35		28/140=20		E	Applied Engineering and Design (specialization)				38/140 = 27	
	C	Basic Engineering (faculty req.)				29/140=20								

PROPOSED STUDY PLAN FOR THE Industrial and Manufacturing Engineering Program IME - Version 7.4

(Industrial Engineering Major) 140 CREDITS – 4 years

		Fall	Cr. Hrs	Lec.	Tut	Lab	Tot		Spring	Cr. Hrs	Lec.	Tut	Lab	Tot
First Year	HUM 101	Safety and Risk Management	2	2	-	-	2	HUM 103	Japanese Language (1) [Non Credit]	-	2	-	-	2
	HUM 102	English Language (non-credit)	-	2	-	-	2	HUM 104	Technical Report Writing	2	2	-	-	2
	MTH 101	Mathematics (1)	3	2	2	-	4	HUM 105	Communications, Presentations and Soft Skills	2	2	-	-	2
	PHY 101	Physics (1)	3	2	2	-	4	CHM 101	Chemistry (1)	3	2	2	-	4
	MCE 101	Mechanics (Statics + dynamics)	3	2	2	-	4	CSE 101	Computer Programming	3	2	-	2	4
	PHY 102	Basic Sciences Lab -1 (Physics 1)	2	-	-	4	4	MSE 101	Fundamentals of Materials Science(Prop+test)	3	2	2	-	4
	IME 101	Engineering Drawing	3	2	1	1	4	CHM 102	Basic Sciences Lab -2 (Chemistry + material)	2	-	-	4	4
								IME 102	Introduction to Manufacturing Processes	3	2	1	1	4
		Total	16	12	5	7	24		Total	18	14	5	7	26
Second Year	HUM 201	Japanese Language (2) [Non Credit]	-	2	-	-	2	HUM 2xx	Humanities elective 1	2	2	-	-	2
	HUM 202	Engineering ethics and Laws	2	2	-	-	4	HUM 203	Engineering Economy	2	2	-	-	2
	MTH 201	Mathematics (2)	3	2	2	-	4	MTH 202	Probability and Statistics	3	2	2	-	4
	EPE 201	Measurements and Instrumentations	3	2	2	-	4	CSE 201	Computing and Networking	2	2	-	-	2
	EPE 202	Electrical Engineering (circuits + machines)	3	2	2	-	4	CPE 201	Introduction to Energy, Environmental and Chemical Eng.	3	3	-	-	3
	ERE 201	Thermo-fluids	3	2	1	1	4	ECE 201	Introduction to Electronics Engineering	3	2	1	1	4
	EPE 203	Basic Engineering Lab-1 (electrical + instrument)	3	-	-	6	4	CPE 202	Basic Engineering Lab-2 (Chemical + energy + env engg)	3	-	-	6	6
		Total	17	12	7	7	26		Total	18	13	3	7	23
	HUM 3xx	Humanities elective 2	2	2	-	-	2	HUM 301	Project Management	2	2	-	-	2
	IME 311	Metrology and Precision Engineering	3	2	-	2	4	IME 321	Production and Operations Management	3	2	1	1	4
	IME 313	Mechanical Design (1)	3	2	1	1	4	IME 322	Statistical Quality Control	3	2	2	-	4
	IME 314	Manufacturing Processes	3	2	2	-	4	IME 323	Seminar on IME	2	2	-	-	2
	IME 314	Operations Research (1)	3	2	1	1	4	IME 324	Ergonomics and Human Factors Engg.	3	2	1	1	4
	IME 315	Mechanical Workshop	3	-	-	6	6	IME 325	Facility Layout and Material Handling	3	2	1	1	4
	IME 316	Project Based Learning on IME	2	-	-	4	4	IME 326	Mathematics (3)	3	2	2	-	4
		Total	19	10	4	14	28		Total	19	14	7	3	24
									Industrial Training (Compulsory, Non credit)					
Fourth Year	HUM 4xx	Humanities elective 3	2	2	-	-	2	HUM 401	Entrepreneurial Leadership	2	2	-	-	2
	IME 4xx	Elective 1:	3	2			4	IME 4xx	Elective 2:	3	2			4
	IME 427	Computer-Integrated Manufacturing (CIM)	3	2	1	1	4	IME 4xx	Elective 3:	3	2			4
	IME 417	Management Information Systems	3	2	1	1	4	IME 4xx	Elective 4:	3	2			4
	IME 418	Supply Chain and Logistics Management	3	2	1	1	4	IME 420	Senior Project Thesis	4	1	-	6	7
	IME 410	Senior Project Thesis (6 Credits)	4	1	-	6	7							
		Total	18	11	3+	9+	25		Total	15	9	0+	6+	21
			Total%	Target % Tolerance		Proposed				Total	Target %Tolerance		Proposed	
	A	Humanities and social sciences (Univ req.)	14	14 - 18		20/140=14		D	Basic engineering (specialization)	46	48 - 60		25/140 = 19	
	B	Math and Basic Science (faculty req.)	40	28 - 35		28/140=20		E	Applied Engineering and Design (specialization)				38/140 = 27	
	C	Basic Engineering (faculty req.)				29/140=20								

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STUDY PLAN FOR THE Industrial and Manufacturing Engineering Program IME
(Manufacturing Major) 140 CREDITS – 4 years

		Fall	Cr. Hrs	Lec	Tut	Lab	Tot		Spring	Cr. Hrs	Lec.	Tut	Lab	Tot
First Year	HUM 111	Safety and Risk Management	2	2	-	-	2	HUM 121	Japanese Language (1) [Non Credit]	-	2	-	-	2
	HUM 121	English Language (non-credit)	-	2	-	-	2	HUM 122	Technical Report Writing	2	2	-	-	2
	BAS 111	Mathematics (1)	3	2	2	-	4	HUM 123	Communications, Presentations and Soft Skills	2	2	-	-	2
	BAS 112	Physics (1)	3	2	2	-	4	BAS 121	Chemistry (1)	3	2	2	-	4
	BAS 113	Mechanics (Statics + dynamics)	3	2	2	-	4	COE 121	Computer Programming	3	2	-	2	4
	BAS 114	Basic Sciences Lab -1 (Physics 1)	2	-	-	4	4	MAE 211	Fundamentals of Materials Science(Prop+test)	3	2	2	-	4
	IME 111	Engineering Drawing	3	2	1	1	4	BAS 124	Basic Sciences Lab -2 (Chemistry + material)	2	-	-	4	4
								IME 121	Introduction to Manufacturing Processes	3	2	1	1	4
		Total	16	12	5	7	24		Total	18	14	5	7	26
Second Year	HUM 211	Japanese Language (2) [Non Credit]	-	2	-	-	2	HUM 221	Humanities elective 1	2	2	-	-	2
	HUM 212	Engineering ethics and Laws	2	2	-	-	4	HUM 222	Engineering Economy	2	2	-	-	2
	BAS 211	Mathematics (2)	3	2	2	-	4	BAS 221	Probability and Statistics	3	2	2	-	4
	ENE 211	Measurements and Instrumentations	3	2	2	-	4	EPC 221	Computing and Networking	2	2	-	-	2
	EPC 221	Electrical Engineering (circuits + machines)	3	2	2	-	4	ERC 211	Introduction to Energy, Environmental and Chemical Eng.	3	3	-	-	3
	ENE 212	Thermo-fluids	3	2	1	1	4	EPC 222	Introduction to Electronics Engineering	3	2	1	1	4
	BAS 212	Basic Engineering Lab-1 (electrical + instrument)	3	-	-	6	4	BAS 222	Basic Engineering Lab-2 (Chemical + energy + env engg)	3	-	-	6	6
		Total	17	12	7	7	26		Total	18	13	3	7	23
	HUM 311	Humanities elective 2	2	2	-	-	2	HUM 322	Project Management	2	2	-	-	2
	IME 311	Metrology and Precision Engineering	3	2	-	2	4	IME 321	Production and Operations Management	3	2	1	1	4
	IME 313	Mechanical Design (1)	3	2	1	1	4	IME 322	Statistical Quality Control	3	2	2	-	4
	IME 314	Manufacturing Processes	3	2	2	-	4	IME 323	Seminar on IME	2	2	-	-	2
	IME 314	Operations Research (1)	3	2	1	1	4	IME 327	Mechanical Design (2)	3	2	1	1	4
	IME 315	Mechanical Workshop	3	-	-	6	6	IME 328	Theories of Metal Cutting	3	2	1	1	4
	IME 316	Project Based Learning on IME	2	-	-	4	4	IME 329	Mechanical Vibrations	3	2	1	1	4
		Total	19	10	4	14	28		Total	19	14	6	4	24
									Industrial Training (Compulsory, Non-credit)					
Fourth Year	HUM 413	Humanities elective 3	2	2	-	-	2	HUM 424	Entrepreneurial Leadership	2	2	-	-	2
	IME 411	Elective 1:	3	2			4	IME 422	Elective 2	3	2			4
	IME 412	Computer-Integrated Manufacturing (CIM)	3	2	-	2	4	IME 423	Elective 3:	3	2			4
	IME 415	Computer Numerical Control (CNC)	3	2	-	2	4	IME 424	Elective 4:	3	2			4
	IME 416	Non-conventional Machining	3	2	-	2	4	IME 420	Senior Project Thesis	4	1	-	6	7
	IME 410	Senior Project Thesis (8 Credits)	4	1	-	6	7							
		Total	18	11	0+	15+	25		Total	15	9	0+	6+	21
			Total%	Target % Tolerance		Proposed				Total	Target %Tolerance		Proposed	
	A	Humanities and social sciences (Univ req.)	14	14 - 18		20/140=14		D	Basic engineering (specialization)	46	48 - 60		25/140 = 19	
	B	Math and Basic Science (faculty req.)	40	28 - 35		28/140=20		E	Applied Engineering and Design (specialization)				38/140 = 27	
	C	Basic Engineering (faculty req.)				29/140=20								

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PROPOSED STUDY PLAN FOR THE Materials Science and Engineering program (MSE) - Version 7.2 – revised %

(Materials Science and Engineering Major) 140 CREDITS – 4 years

		Fall	Cr. Hrs	Lec.	Tut	Lab	Tot		Spring	Cr. Hrs	Lec.	Tut	Lab	Tot
First Year	HUM 111	Safety and Risk Management	2	2	-	-	2	HUM 121	Japanese Language (1) [Non Credit]	-	2	-	-	2
	HUM 121	English Language (non-credit)	-	2	-	-	2	HUM 122	Technical Report Writing	2	2	-	-	2
	BAS 111	Mathematics (1)	3	2	2	-	4	HUM 222	Communications, Presentations and Soft Skills	2	2	-	-	2
	BAS 112	Physics (1)	3	2	2	-	4	BAS 121	Chemistry (1)	3	2	2	-	4
	BAS 113	Mechanics (Statics + dynamics)	3	2	2	-	4	COE 121	Computer Programming	3	2	-	2	4
	BAS 114	Basic Sciences Lab -1 (Physics 1)	2	-	-	4	4	MAE 211	Fundamentals of Materials Scienc (Prop+test)	4	2	-	4	6
	IME 111	Engineering Drawing	3	2	1	1	4	BAS 124	Basic Sciences Lab -2 (Chemistry + material)	2	-	-	4	4
								IME 121	Introduction to Manufacturing Processes	3	2	1	1	4
		Total	16	12	7	5	24		Total	19	14	5	7	26
Second Year	HUM 211	Japanese Language (2) [Non Credit]	-	2	-	-	2	HUM 223	Engineering Economy	2	2	-	-	2
	HUM 212	Engineering ethics and Laws ??	2	2	-	-	4	HUM 311	Humanities elective 1	2	2	-	-	2
	BAS 211	Mathematics (2)	3	2	2	-	4	BAS 221	Probability and Statistics	3	2	2	-	4
	ENE 211	Measurements and Instrumentations	3	2	2	-	4		Computing and Networking	2	2	-	-	2
	EPC 221	Electrical Engineering (circuits + machines)	3	2	2	-	4	ERC 211	Introduction to Energy, Environmental, and Chemical Eng.	3	3	-	-	3
		Thermofluids	3	2	1	1	4		Introduction to Electronics Engineering	3	2	1	1	4
	BAS 212	Basic Engineering Lab-1 (electrical + instrument)	3	-	-	6	4	BAS 222	Basic Engineering Lab-2 (energy + env engg + Chemical)	3	-	-	6	6
		Total	17	12	7	7	26		Total	18	13	3	7	23
	HUM 311	Humanities elective 2	2	2	-	-	2	HUM 322	Project Management	2	2	-	-	2
	MSE 311	Thermodynamics and Phase Transformations	3	2	1	1	4	MSE 321	Mechanical Behavior of Materials	3	2	1	1	4
	MSE 312	Physics of Solid Materials	3	2	1	1	4	MSE 322	Fundamental of Materials Processing	3	2	1	1	4
	MSE 313	Materials Chemistry	3	2	1	1	4	MSE 323	Seminar on MSE	2	2	-	-	2
	MSE 314	Structures and Properties of Materials	3	2	1	1	4	MSE 310	Mathematics Methods for Materials	3	2	1	1	4
	MSE 315	Microstructural Evaluation of Materials	3	2	1	1	4	MSE 324	Ceramic and Glasses	3	2	1	1	4
	MSE 316	Project Based Learning on MSE	2	-	-	4	4	MSE 325	Polymeric Engineering Materials	3	2	1	1	4
		Total	19	12	5	9	26		Total	19	14	5	5	24
									Industrial Training (Compulsory, Non credit)					
Fourth Year	HUM 413	Humanities elective 3	2	2	-	-	2	HUM 425	Entrepreneurial Leadership	2	2			2
	MSE 4XY	Elective 1:	3	2	1	1	4	MSE 4XY	Elective 2:	3	2	1	1	4
	MSE 411	Nanomaterials for Engineers	3	2	1	1	4	MSE 4XY	Elective 3:	3	2	1	1	4
	MSE 412	Structural Metallic Materials	3	2	1	1	4	MTR	Elective 4:	3	2	1	1	4
	MSE 413	Modeling and Simulation in Materials	3	2	1	1	4	MSE 420	Senior Project Thesis	4	1	-	6	7
	MSE 410	Senior Project Thesis (8 Credits)	4	1	-	6	7							
		Total	18	11	4	10	25		Total	15	9	3	9	21
			Total%	Target % Tolerance		Proposed				Total	Target %Tolerance		Proposed	
	A	Humanities and social sciences (Univ req.)	14	14 - 18		20/140=14		D	Basic engineering (specialization)	17	48 - 60		25/140 = 18	
	B	Math and Basic Science (faculty req.)	40	28 - 35		28/140=20		E	Applied Engineering and Design (specialization)	29			38/140 = 27	
	C	Basic Engineering (faculty req.)				29/140=20								

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Annex 10

Schedule of the Campus Construction and Equipment Installation

1. Basic Infrastructure

Year	Month	Target
2015	July	Land acquisition has been completed
2015	November	Detail Design will be completed
	December	Tender document will be completed
2016	January	Approval of direct order by the Egyptian government
	February	Commencement of construction
	November	Completion of construction

2. Building (Phase-1*)

Year	Month	Target
2015	July	Land acquisition has been completed
2015	December	Equipment utilities' plan will be submitted by the Preparatory Survey team to IAA
2016	April	Detail Design will be completed
	April	Tender document will be completed
	May	Approval of direct order by the Egyptian government
	June	Commencement of construction
2017	June	Completion of construction

*All equipment of the Project will be installed in the Phase 1 buildings.

3. Equipment Installation Plan of the Project

Year	Month	Target
2015	October	Outline Design Survey
2016	January	Draft of Design Survey
	March	Cabinet Approval
	April	E/N, G/A
	May	Contract of Consultant
	November	Tender Announcement
2017	January	Contract of Contractor
	May	Production and delivery of Equipment
	June	Custom Clearance by E-JUST
	June	Commencement of Installation of equipment
	July	Completion of Installation
	August	Test Operation by E-JUST

M.A

Project Monitoring Report
on
Project Name
Grant Agreement No. XXXXXXX
20XX, Month

Organization Information

Authority (Signer of the G/A)	Person in Charge _____ (Div ision) _____ Contacts Address: _____ Pho ne/FAX: _____ Email: _____
Executing Agency	Person in Charge _____ (Division) _____ Contacts Address: _____ Pho ne/FAX: _____ Email: _____
Line Agency	Person in Charge _____ (Division) _____ Contacts Address: _____ Pho ne/FAX: _____ Email: _____

Outline of Grant Agreement:

Source of Finance	Government of Japan: Not exceeding JPY _____ mil. Government of (_____): _____
Project Title	
E/N	Signed date: Duration:
G/A	Signed date: Duration:

1

M·A

1: Project Description

1-1 Project Objective

1-2 Necessity and Priority of the Project

- Consistency with development policy, sector plan, national/regional development plans and demand of target group and the recipient country.

1-3 Effectiveness and the indicators

- Effectiveness by the project

Quantitative Effect (Operation and Effect indicators)		
Indicators	Original (Yr)	Target (Yr)
Qualitative Effect		

2: Project Implementation

2-1 Project Scope

Table 2-1-1a: Comparison of Original and Actual Location

Location	**Original:** *(M/D)* **Attachment(s):Map**	**Actual:** *(PMR)* **Attachment(s):Map**

Table 2-1-1b: Comparison of Original and Actual Scope

Items	Original	Actual
(M/D) 'Soft component' shall be included in 'Items'.	*(M/D)*	*(PMR)* Please state not only th e most updated schedul e but also other past re visions chronologically. All change of design shal l be recorded regardless of its degree.

2-1-2 Reason(s) for the modification if there have been any.

(PMR)

2-2 Implementation Schedule
2-2-1 Implementation Schedule

Table 2-2-1: Comparison of Original and Actual Schedule

Items	Original		Actual
	DOD	G/A	
(M/D) 'Soft component' shall be stated in the column of 'Items'. Project Completion Date*	*(M/D)*		*(PMR)* As of (Date of Revision) Please state not only the most updated schedule but also other past revisions chronologically.

*Project Completion was defined as _____ at the time of G/A.

2-2-2 Reasons for any changes of the schedule, and their effects on the project.

2-3 Undertakings by each Government
2-3-1 Major Undertakings
See Attachment 2.

M.A

2-3-2 Activities
See Attachment 3.

2-3-3 Report on RD
See Attachment 4.

2-4 Project Cost
2-4-1 Project Cost

Table 2-4-1a Comparison of Original and Actual Cost by the Government of Japan
(Confidential until the Tender)

Items			Cost (Million Yen)	
	Original	Actual	Original	Actual
Construction Facilities (or Equipment)	'Soft component' shall be included in 'Items'.			Please state not only the most updated schedule but also other past revisions chronologically.
Consulting Services	- Detailed design -Procurement Management -Construction Supervision			
Total				

Note: 1) Date of estimation:
2) Exchange rate: 1 US Dollar = Yen

Table 2-4-1b Comparison of Original and Actual Cost by the Government of XX

Items			Cost (Million USD)	
	Original	Actual	Original	Actual
				Please state not only the most updated schedule but also other past revisions chronologically.
Total				

Note: 1) Date of estimation:
2) Exchange rate: 1 US Dollar = (local currency)

2-4-2 Reason(s) for the wide gap between the original and actual, if there have been any, the remedies you have taken, and their results.

(PMR)

2-5 Organizations for Implementation

2-5-1 Executing Agency:

- Organization's role, financial position, capacity, cost recovery etc,
- Organization Chart including the unit in charge of the implementation and number of employees.

Original: *(M/D)*
Actual, if changed: *(PMR)*

2-6 Environmental and Social Impacts

- The results of environmental monitoring as attached in Attachment 5 in accordance with Schedule 4 of the Grant Agreement.
- The results of social monitoring as attached in Attachment 5 in accordance with Schedule 4 of the Grant Agreement.
- Information on the disclosed results of environmental and social monitoring to local stakeholders, whenever applicable.

3: Operation and Maintenance (O&M)

3-1 O&M and Management

- Organization chart of O&M
- Operational and maintenance system (structure and the number ,qualification and skill of staff or other conditions necessary to maintain the outputs and benefits of the project soundly, such as manuals, facilities and equipment for maintenance, and spare part stocks etc)

Original: *(M/D)*
Actual: *(PMR)*

3-2 O&M Cost and Budget

- The actual annual O&M cost for the duration of the project up to today, as well as the annual O&M budget.

M.A

Original: *(M/D)*

4: Precautions (Risk Management)

- Risks and issues, if any, which may affect the project implementation, outcome, sustainability and planned countermeasures to be adapted are below.

Original Issues and Countermeasure(s): *(M/D)*	
Potential Project Risks	Assessment
1.	Probability: H/M/L
(Description of Risk)	Impact: H/M/L
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action during the Implementation:
	Contingency Plan (if applicable):
2.	Probability: H/M/L
(Description of Risk)	Impact: H/M/L
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action during the Implementation:
	Contingency Plan (if applicable):
3.	Probability: H/M/L
(Description of Risk)	Impact: H/M/L
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action during the Implementation:
	Contingency Plan (if applicable):

M . A

Actual issues and Countermeasure(s)
(PMR)

5: Evaluation at Project Completion and Monitoring Plan

5-1 Overall evaluation

Please describe your overall evaluation on the project.

5-2 Lessons Learnt and Recommendations

Please raise any lessons learned from the project experience, which might be valuable for the future assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

5-3 Monitoring Plan for the Indicators for Post-Evaluation

Please describe monitoring methods, section(s)/department(s) in charge of monitoring, frequency, the term to monitor the indicators stipulated in 1-3.

Attachment

1. Project Location Map
2. Undertakings to be taken by each Government
3. Monthly Report
4. Report on RD
5. Environmental Monitoring Form / Social Monitoring Form
6. Monitoring sheet on price of specified materials (Quarterly)
7. Report on Proportion of Procurement (Recipient Country, Japan and Third Countries) (Fina l Report Only)

M.A

Attachment 6

Monitoring sheet on price of specified materials

1. Initial Conditions (Confirmed)

	Items of Specified Materials	Initial Volume A	Initial Unit Price (¥) B	Initial total Price C=A×B	1% of Contract Price D	Condition of payment	
						Price (Decreased) E=C−D	Price (Increased) F=C+D
1	Item 1	●●t	●	●	●	●	●
2	Item 2	●●t	●	●	●		
3	Item 3						
4	Item 4						
5	Item 5						

2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring : ●●

(2) Result of the Monitoring Survey on Unit Price for each specified materials

	Items of Specified Materials	1st ●month, 2015	2nd ●month, 2015	3rd ●month, 2015	4th	5th	6th
1	Item 1						
2	Item 2						
3	Item 3						
4	Item 4						
5	Item 5						

(3) Summary of Discussion with Contractor (if necessary)

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Attachment 7

Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)
(Actual Expenditure by Construction and Equipment each)

	Domestic Procurement (Recipient Country) A	Foreign Procurement (Japan) B	Foreign Procurement (Third Countries) C	Total D
Construction Cost	(A/D%)	(B/D%)	(C/D%)	
Direct Construction Cost	(A/D%)	(B/D%)	(C/D%)	
others	(A/D%)	(B/D%)	(C/D%)	
Equipment Cost	(A/D%)	(B/D%)	(C/D%)	
Design and Supervision Cost	(A/D%)	(B/D%)	(C/D%)	
Total	(A/D%)	(B/D%)	(C/D%)	

TECHNICAL NOTES

THE PREPARATORY SURVEY
ON
THE PROJECT
FOR
PROCUREMENT OF EDUCATION AND RESEARCH EQUIPMENT
FOR
EGYPT-JAPAN UNIVERSITY OF SCIENCE AND TECHNOLOGY

Subsequent to Minutes of Discussions signed on October 20, 2015 between Egypt-Japan University of Science and Technology (E-JUST) and Japan International Cooperation Agency, E-JUST and the Preparatory Survey Team (hereinafter referred to as "the Team") conducted a further study and held a series of discussions. Through the study and the discussions, E-JUST and the Team confirmed the following items described in the attached sheets and ensured to consider them in Japan.

Cairo, November 5th. 2015

Mr. Akihiro OKAMOTO
Chief Consultant
Preparatory Survey Team
Japan

Prof. Ahmed El-Gohary
President
Egypt-Japan University of Science and Technology
Arab Republic of Egypt

Attachment

The equipment list requested by the Government of Egypt, which was attached to the minutes of discussions, has been reviewed in terms of the following criteria.

Selection Criteria

- ✓ Equipment required for science and engineering education of the Undergraduate Program of E-JUST, which is for implementing the study plans of 8 departments such as Chemical and Petrochemical Engineering (CPE), Computer Science and Engineering (CSE), Electronics and Communication Engineering (ECE), Electrical Power Engineering (EPE), Energy Resources Engineering (ERE), Mechatronics Engineering (MTE), Industrial and Manufacturing Engineering (IME) and Materials Science and Engineering (MSE).
- ✓ Equipment for realizing safety conditions of laboratories equivalent to Japanese top level universities.
- ✓ General and laboratory furniture, and office utilities are excluded.
- ✓ Small parts and consumable which could be purchased by E-JUST are excluded.

Further Study

The Team will make a further study on the equipment list requested after the survey. The following criteria shall be considered to evaluate the equipment.

- ✓ Equipment shall be finalized after the consultation with the Japanese Supporting Universities.
- ✓ Equipment requiring a superior knowledge and higher teaching technique for academic staffs compared with their current levels shall be excluded.
- ✓ Equipment requiring spare parts and consumable which won't be available in Egypt and/or won't be imported from other countries shall be excluded.
- ✓ Equipment requiring superior maintenance skills in terms of a sustainable use shall be excluded.
- ✓ Equipment such as a software, which would be better to be purchased by E-JUST in terms of academic use and pricing, shall be excluded.
- ✓ Equipment which would be required to specify a certain model shall be excluded.
- ✓ A software required an annual update or renewal of contract with high price, which E-JUST cannot afford, it may be excluded.

Priority Given in the Equipment List Requested

Although the priority has been given by E-JUST as A, B and C in the equipment list requested, the Team will evaluate its necessity and validity according to the criteria mentioned above. As a results of such evaluation, even the equipment prioritized as "A" shall be excluded in the final list for the Project.

Equipment List Requested is shown in ANNEX-1.

Equipment List Requested

Code No.	Equipment Name	Q'ty	Priority
01. Basic Science Lab. - 1			
01-1	Equipment for Basic Science Lab.-1	1	A
02. Basic Science Lab. - 2			
02-1	Equipment for Basic Science Lab.-2	1	A
03. Computer Programming. Lab.			
03-1	Desktop PC	41	A
03-2	Auto CAD	45	A
03-3	Catia	41	A
03-4	Solidworks	1	A
03-5	ADAMS	1	A
03-6	Smart Board IWB System	1	A
03-7	High Definition Projector	2	A
03-8	Instructor Graphics Workstation	1	A
03-9	A0 Plotter	1	A
03-10	Desktop 3D Printer	1	A
03-11	Application Server	1	A
03-12	Smart Graphics Touch Screen	1	A
04. Materials Science Lab.			
04-1	Tensile Testing Machine	10	A
04-2	Impact Testing Machine (Charpy)	10	A
04-3	Split Hopkinson Pressure Bar	5	A
04-4	Young's Modulus Setup	10	C
04-5	Thermal Expansion Trainer	2	A
04-6	Thermal Conductivity Trainer	2	A
04-7	Resistivity and Band Gap Measurments	10	A
04-8	Magnetism Measurment	10	A
04-9	Semi-Conductor Hall Effect System	10	C
04-10	Trinocular Microscope	5	B
04-11	Data Acquisition Using LabVIEW	10	A
04-12	Powder and Porous Materials Density Measuring System	10	A
04-13	Viscometer	10	A
04-14	Post Office Box Trainer	10	A
04-15	Vernier Caliper	15	A
04-16	Micrometer	15	A
04-17	Electric Balanc	5	A
04-18	Thermocouple	15	A
04-19	Fume Hood	3	A
05. Basic Engineering Lab. - 1			
05-1	Power Supply Unit (USB)	21	A
05-2	Magnetism & Electromagnetism Module	21	A
05-3	DC Fundamentals Module	21	A
05-4	DC Network Theorem Module	21	A
05-5	Personal Computer	21	A
05-6	DC Power Supply	21	A
05-7	Function Generator	21	A
05-8	Digital Multimeter	21	A
05-9	Digital Storage Oscilloscope	21	A
06. Basic Engineering Lab. 2			
06-1	Titrations Experiment (5 models)	10	A
06-2	Electrochemical Process Experemintals	10	A
06-3	Fuel Cell Trainer	1	A
06-4	UV/vis Spectrophotometer	3	A
06-5	Chemical Process Industerial System	10	B
06-6	Clean Energy Trainer	3	B

Equipment List Requested

Code No.	Equipment Name	Q'ty	Priority
06-7	Atomic Absorption	2	C
06-8	Thermal Conductivity of Building Materials	5	A
06-9	Gas/Liquid Heat Conduction Trainer	5	A
06-10	Temperature Measurement Trainer	5	A
06-11	Pressure Measurement Trainer	5	A
06-12	Convection and Radiation	5	A
06-13	Steam Distillation Unit	1	A
06-14	Autoclave	3	A
06-15	Laboratory Furnace	2	A
06-16	UV Water Purification System	2	A
07. Electronics and Circuits Lab.			
07-1	Personal Computer	28	A
07-2	Electronics Circuits Lab	28	A
07-3	Electronics Circuits Kit	28	A
07-4	PCB CNC machines	1	B
08. Mechanical Workshop 1			
08-1	Universal Grinding Machine	6	A
08-2	Hydraulic Press	1	A
08-3	Universal Milling Machine	6	A
08-4	Centrifugal Casting Set	5	A
08-5	Forging Induction Furnace	1	A
08-6	Forging Press	1	A
08-7	Mechanics Lathe with Milling Unit	3	A
08-8	Sand Casting Kit	10	A
08-9	Bell Casting Set	10	A
08-10	Lathe	6	A
08-11	Foundry Sand Mixing Unit	2	A
08-12	Portable MIG/TIG Welder	5	A
08-13	Bench Mounted Column Drill	3	A
08-14	Column Drill	3	A
08-15	Welding Booth	10	A
08-16	Spot Welding Unit with Arm Set	5	A
08-17	Manual Hydraulic Workshop Press	6	A
08-18	Arbor Press	6	A
08-19	Manual Arc Welding Station	4	A
08-20	Melting Furnace for Light Metal	2	A
08-21	Universal Bender	6	A
08-22	Sheet Metal Forming Combination Machine	6	A
08-23	Hydraulic Tube Bender	6	A
08-24	Portable Oxyacetylene Welding Unit	10	A
08-25	Angle Iron Bender	6	A
08-26	Analog Measuring Tool Set	12	A
08-27	Assembly Stand	6	B
08-28	Power Worker Metal Cutter	6	B
08-29	Diamond File Set	6	B
08-30	Universal Machine Vise	12	C
08-31	De Luxe Clamping Tool Set 16/M16	1	C
08-32	De Luxe Clamping Tool Set 16/M14	1	C
08-33	Swivel Hold-Down Clamp Set 100/M16	5	C
08-34	De Luxe Clamping Tool Set 14/M12	1	C
08-35	De Luxe Clamping Tool Set 12/M10	1	C
08-36	Swivel Hold-Down Clamp Set 100/M14	5	C
08-37	Swivel Hold-Down Clamp Set 100/M12	5	C
08-38	Set of Step Blocks	1	C

Equipment List Requested

Code No.	Equipment Name	Q'ty	Priority
10. Mechanical Workshop 2			
10-1	Master CNC Training Center	1	A
10-2	Laser Cutting System	1	A
10-3	Milltap Cutting Machine	1	A
10-4	Surface Metrology and Form Measurement System	1	A
10-5	Basic CNC Training Center	1	A
10-6	Water-Jet Cutting System	1	A
10-7	Conventional Cylindrical Grinding Machine	1	A
10-8	Hydraulic Surface Grinder	1	A
10-9	Multipurpose Milling Machine	1	A
10-10	Precision Lathe	1	A
10-11	CNC Electric Wire Discharge Machine	1	A
10-12	Electric Discharge Machine	1	A
10-13	Semi-Automatic Miter Band Saw	1	A
10-14	Mechanics Lathe with Milling Unit	1	A
10-15	Drill Press	1	A
10-16	Column Drill	1	A
10-17	Electronic Hardness Tester	1	A
10-18	Universal Tool Grinding Machine	1	A
10-19	Sanding and Polishing Machine	1	A
10-20	DELL Precision workstation	2	A
10-21	Dual Pedestal Grinder	1	A
10-22	Electronic Edge Tracer	2	A
10-23	Assembly Stand	2	B
10-24	Set of Step Blocks	1	B
10-25	Radial Drill Press	1	C
10-26	Inside Micrometer Set 3-POINT 40-100	1	C
10-27	Inside Micrometer Set 3-POINT 20-40	1	C
10-28	Inside Micrometer Set 3-POINT 11-20	1	C
10-29	Digital Micrometer Calipers 0-100mm	2	C
10-30	Machine Vise with Pull-Down System	2	C
10-31	Parallel Gauge-Block Set	2	C
10-32	Machine Vise with Pull-Down System	2	C
10-33	External Micrometer Set, 150-300 mm	2	C
10-34	External Micrometer Set, 0-150 mm	2	C
10-35	Precision Inside Micrometer Set 50-600 mm	2	C
10-36	De Luxe Clamping Tool Set 16/M16	1	C
10-37	De Luxe Clamping Tool Set 16/M14	1	C
10-38	Swivel Hold-Down Clamp Set 100/M16	5	C
10-39	De Luxe Clamping Tool Set 14/M12	1	C
10-40	De Luxe Clamping Tool Set 12/M10	1	C
10-41	Measuring Tool Set M5	2	C
10-42	Power Worker Metal Cutter	6	C
10-43	Swivel Hold-Down Clamp Set 100/M14	5	C
10-44	Workshop Caliper 500 mm	2	C
10-45	Swivel Hold-Down Clamp Set 100/M12	5	C
10-46	Dial Caliper 300 mm	2	C
10-47	Metric Precision Dial	2	C
10-48	Precision Dial Gauge	2	C
10-49	Digital Caliper Rule 200 mm	2	C
10-50	Diamond File Set	3	C
10-51	Analog Dial Gauge	2	C
11. Drawing Studios			
11-1	Equipment for Drawing Studios	1	A

Equipment List Requested

Code No.	Equipment Name	Q'ty	Priority
12. Automatic Control Lab.			
12-1	Analog and Digital DC Servo System	3	A
12-2	Magnetic Levitation System	3	A
12-3	Digital Pendulum	3	A
12-4	Coupled Tanks System	3	A
12-5	Level/Flow Process Control	3	A
12-6	Temperature Process Control	3	A
12-7	Pressure Process Control	3	A
12-8	Ball & Beam Apparatus	3	A
12-9	Helicopter Model	3	A
12-10	Allen Bradley PLC Trainer	5	A
12-11	Siemens PLC Trainer	5	A
13. Mechanical Vibrations Lab.			
13-1	Universal Vibration Apparatus	5	A
13-2	Vibraioon Sensor with Clamping Set	2	B
13-3	Whirling of Shafts Apparatus	5	A
13-4	Dynamic Balancing Machine	5	A
13-5	Impact Test Hammer	1	B
13-6	Machinery Diagnostic System	1	A
13-7	Computerised Vibration Analyser	1	A
16. Simulation Software			
16-1	Matlab & Simulink Software	24	A
16-2	Opnet Moduler	6	A
16-3	SPEC Benchmarks "A"	1	A
16-4	SPEC Benchmarks "B"	1	A
16-5	SPEC Benchmarks "C"	1	A
16-6	SPEC Benchmarks "D"	1	A
16-7	SPEC Benchmarks "E"	1	A
16-8	SPEC Benchmarks "F"	1	A
16-9	SPEC Benchmarks "G"	1	A
16-10	SPEC Benchmarks "H"	1	A
16-11	SPEC Benchmarks "I"	1	A
16-12	SPEC Benchmarks "J"	1	A
16-13	SPEC Benchmarks "K"	1	A
16-14	SPEC Benchmarks "L"	1	A
16-15	SPEC Benchmarks "M"	1	A
16-16	PGI Accelerator CDK	1	A
23. Instrumentation Lab. 1			
23-1	Personal Computer	28	A
23-2	Electronics Circuits Lab	28	A
23-3	Electrical Circuits Kit	28	A
23-4	PCB CNC machines	1	B
23.1-1	Data Acquisition Systems	15	A
23.1-2	LabVIEW 8.6 Real-Time Module	15	A
23.1-3	Oscilloscope	15	A
23.1-4	Electronic Counters	15	A
23.1-5	Function Generator	15	A
23.1-6	FFT Signal Analyzer	5	A
23.1-7	Power supplies	15	A
23.1-8	Digital Multimeters	15	A
23.1-9	Transducer Kit	15	A
23.1-10	Strain Gage Application Kit	15	A
24. Instrumentation Lab 2			
24-1	Thermal Conductivity of Building Materials	5	A

Equipment List Requested

Code No.	Equipment Name	Q'ty	Priority
24-2	Heat Conduction in Gases and Liquids	5	A
24-3	Temperature Measurement Trainer	5	A
24-4	Pressure Measurement Trainer	5	A
24-5	Convection and Radiation Trainer	5	A
09. MONOTSUKURI Center			
09-1	Equipment for MONOTSUKURI Center	1	A
105. IME PBL			
105-1	Equipment for IME PBL	1	A
25. IEM Applications Lab.			
25-1	PC + Monitor	20	A
25-2	ILOG OPL-CPLEX Analyst Studio	1	A
25-3	Arena Academic Lab license (30 seats)	1	A
25-4	Lingo	20	A
25-5	Palisade DecisionTools Suite	20	B
25-6	TransCAD Standard	1	A
25-7	Factory design suite - Ultimate - Educational laboratory license (20 seats)	1	B
25-8	SPSS Statistics	20	B
25-9	Minitab	20	A
25-10	Applications server	1	A
25-11	FlexSim	1	C
25-12	Matlab	20	A
25-13	Microsoft Visual Studio 2008	20	B
25-14	Gurobi Optimizater	1	B
25-15	MS Visio	20	A
25-16	ithink	20	B
25-17	MS Project	20	A
25-18	AnyLogic	20	B
25-19	Intelligent Lectern	2	B
25-20	A0 plotter	1	A
25-21	Instructor Graphics Workstation	1	A
25-22	high resolution projector	2	A
25-23	Graphics Editing touch tablets	1	A
26. CAD RE Lab.			
26-1	PC + Monitor	20	A
26-2	Graphics Touch Tablets	21	A
26-3	Smart Board IWB System	1	A
26-4	3D printer	1	A
26-5	3D printer	10	A
26-6	A0 Plotter	2	A
26-7	Application Server	1	A
26-8	Factory Design Suite Sofaware, Ultimate (20 Licenses)	1	A
26-9	CATIA v5 Sstudent Eedition	1	A
26-10	SolidWorks EDU Edition - NETWORK Classroom - 60 Users	1	A
26-11	Graphics Editing Touch Tablets	1	A
26-12	ANSYS Mechanical	1	A
26-13	Desktop 3D Scanner	11	A
26-14	Portable Articulated Arm CMM	1	A
26-15	Instructor Graphics Workstation	1	A
26-16	High Resolution Projector	4	A
26-17	CNC Router	2	A
26-18	Benchtop Vertical Machining Center	2	A
26-19	Bench Mounted CNC Lathe	2	A
26-20	Bench Top PC Controled CNC Router	2	A
26-21	CO2 laser cutting systems	2	A

Equipment List Requested

Code No.	Equipment Name	Q'ty	Priority
26-22	Mechanics Lathe	1	A
26-23	NX for Design	20	A
26-24	Drill Press/Milling Machine	1	A
27. Motion Analysis			
27-1	High Speed Camera with analysis software (10sets)	1	C
27-2	8 Channel Trigno Wireless EMG Set	1	C
27-3	Force Plate	2	C
27-4	GAIT Walkway	1	C
27-5	High Resolution Projector	1	C
28. Manufacturing Lab.			
28-1	CNC Universal Milling Machine	1	A
28-2	CNC Universal Turning Machine	1	A
28-3	Surface Metrology and Form Measurement System	1	A
28-4	Piezo-Multicomponent Dynamometer	2	A
28-5	6-ch Input Module LAN-XI	2	A
28-6	Piezo-Multicomponent Dynamometer	1	A
28-7	Multipurpose Milling Machine	1	A
28-8	PULSE Reflex Advanced Modal Analysis (Software)	1	A
28-9	FFT Analysis S/W (Software)	1	A
28-10	PULSE Reflex Basic Processing (Software)	1	A
28-11	PULSE Operational Modal Analysis PRO S/W (Software)	1	A
28-12	Mechanics Lathe with Milling Unit	1	A
28-13	PULSE Data Recorder (Software)	1	A
28-14	Test-FEA Integration (Software)	1	A
28-15	Data Manager (Software)	1	A
28-16	PULSE Reflex Advanced Processing (Software)	1	A
28-17	Shock Response Analysis (Software)	1	A
28-18	Drill Press	1	A
28-19	PULSE Time (Software)	1	A
28-20	Driver S/W (Software)	1	A
28-21	PULSE Viewer (Software)	1	A
28-22	Accelerometer Calibrator	1	A
28-23	Force Transducer	3	A
28-24	Cast-iron Surface Plate 1000x1500mm, Grade 0	1	A
28-25	Hardness Tester	1	A
28-26	Miniature Triaxial Piezoelectric IEPE Accelerometer	3	A
28-27	Miniature Cubic Triaxial IEPE Accelerometer	3	A
28-28	Force Transducer	3	A
28-29	DeltaTron Force Transducer	3	A
28-30	DeltaTron Force Transducer	3	A
28-31	DeltaTron Force Transducer	3	A
28-32	DELL Precision workstation	2	A
28-33	Impact Hammer	1	A
28-34	Concentricity Tester	1	A
28-35	Miniature tear-drop IEPE Accelerometer	3	A
28-36	Miniature IEPE Accelerometer	3	A
28-37	Surface Plates Base 630/1000	3	A
28-38	Parallel Gauge-Block Set	2	A
28-39	De Luxe Clamping Tool Set 16/M16	2	A
28-40	De Luxe Clamping Tool Set 16/M14	2	A
28-41	De Luxe Clamping Tool Set 14/M12	2	A
28-42	De Luxe Clamping Tool Set 12/M10	2	A
28-43	Power Worker Metal Cutter	3	A
28-44	Set of Step Blocks	2	A

Equipment List Requested

Code No.	Equipment Name	Q'ty	Priority
28-45	CNC Universal Turning Machine	1	B
28-46	Vertical Machining Centre	1	B
28-47	Precision Lathe	1	B
28-48	Column Drill	1	B
28-49	Cast-iron Surface Plate 800x600mm, Grade 0	1	B
28-50	Electronic Edge Tracer	3	B
28-51	Inside Micrometer Set 40-100mm	1	C
28-52	Inside Micrometer Set 20-40mm	1	C
28-53	Inside Micrometer Set 11-20mm	1	C
28-54	Digital Micrometer Calipers 0-100 mm	2	C
28-55	Machine Vise with Pull-Down System	2	C
28-56	Cast-iron Surface Plate	1	C
28-57	Machine Vise with Pull-Down System	2	C
28-58	External Micrometer Set 6 pcs. 150-300 mm	2	C
28-59	Assembly Stand	2	C
28-60	External Micrometer Sets 0-150 mm	2	C
28-61	Precision Inside Micrometer Set 50-600 mm	2	C
28-62	Swivel Hold-Down Clamp Set 100/M16	5	C
28-63	Measuring Tool Set M5	2	C
28-64	Swivel Hold-Down Clamp Set 100/M14	5	C
28-65	Workshop Caliper INOX 500 mm	2	C
28-66	Precision Angle V-Blocks	4	C
28-67	Swivel Hold-Down Clamp Set 100/M12	5	C
28-68	Hydraulic measuring tripod	4	C
28-69	Magnetic V-Block II	2	C
28-70	Dial Caliper 300 mm	2	C
28-71	Metric Precision Dial	2	C
28-72	Precision Dial Gauge	2	C
28-73	Magnetic V-Block I	2	C
28-74	Digital Caliper Rule 200 mm	2	C
28-75	Diamond File Set	3	C
28-76	Precision Magnetic Measuring Tripod	4	C
28-77	Analog Dial Gauge	2	C
28-78	Magnetic Micrometer Holders	4	C
29. Ergonomics Lab.			
29-1	Biomedical Measuring System	4	A
29-2	Precise Anthropometric Measuring Tools	4	A
29-3	ErgoKit High Pull Force Equipment	4	A
29-4	ErgoKit - Ergonomic Assessment Tools	4	A
29-5	Precise Anthropometric Measuring Tools	4	A
29-6	Goniometer Set	4	A
29-7	Whole Body Vibration Exposure Assessment	4	A
29-8	Heavy Duty Vibration Meter	4	A
29-9	Eye Movement Recorder	2	A
29-10	Advanced Ergonomics Testing Kit and software	4	A
29-11	Physical Work and Function Capacity Evaluation System	4	A
29-12	Occupational Skills Assessment Test Battery	4	A
29-13	Monark 828E Electronic Fitness Cycle	4	A
29-14	Moart Reaction and Movement Time Panel with Psymcon Control	4	A
29-15	High Speed Ddigital Camcorder	4	A
29-16	Portable Sound and Vibration Analyzer	4	A
29-17	Personal Vibration Monitor	4	A
29-18	Whole-Body Vibration Dosimeter and Analyzer	4	A
29-19	Ambient Weather WM-4 Handheld Weather Station	4	A

Equipment List Requested

Code No.	Equipment Name	Q'ty	Priority
29-20	Environmental Control Room	1	A
29-21	Flicker Value Measurement Instrument	4	A
29-22	InfraRed Thermometer	4	A
29-23	Lux-Meter	4	A
30. CIM Lab.			
30-1	Flexible Manufacturing System	1	B
30-2	smart board IWB System	1	A
30-3	Complete CIM System	1	A
30-4	RFID Training Kit	4	A
30-5	RFID Development Lab Kit	4	A
30-6	NX for Manufacturing	20	A
31. Precision Engineering			
31-1	Measuring Tool Kit	10	A
31-2	External Digital Micrometer	10	A
31-3	Depth Micrometer	10	A
31-4	Digital Vernier Caliper	10	A
31-5	Gauge Blocks Sets	10	A
31-6	Magnetic Measuring Stand	2	A
31-7	V- Blocks	10	A
31-8	Thread Gauge	5	A
31-9	Snap Gauges	10	A
31-10	Comparators Stand	16	A
31-11	Dial Gauge (English and Metric)	12	A
31-12	Horizontal Leveling Instrument	6	A
31-13	Square Leveling Instrument	6	A
31-14	Digital Protractor	10	A
31-15	Vernier Protractor	10	A
31-16	Thread Gauge	5	A
31-17	Height Digital Gauge	6	A
31-18	Thread Gauge	5	A
31-19	Surface Plate	1	A
31-20	small Surface Plate	10	A
31-21	CMM Machine	1	B
31-22	Tool Makers Microscope	1	A
31-23	Thread Testing Machine	3	A
31-24	Surface Roughness Measuring Machine	1	A
31-25	Profile Projector	1	A
31-26	Inside Micrometer Set "A"	6	A
31-27	Inside Micrometer Set "B"	6	A
31-28	Bench Center	2	A
31-29	Micrometer Stands	6	A
31-30	Roundtest	1	A
31-31	Depth Micrometer 0-100 mm	10	A
31-32	Internal Micrometer 5-30 mm	10	A
31-33	Verner Caliper 1/50	10	A
31-34	Vernier Caliper 1/20	10	A
31-35	High Resolution Projector	1	A
118. MTE PBL			
118-1	Industrial Scope Meter	2	A
118-2	Robot Set	100	A
118-3	Boe-Bot	100	A
118-4	Multimeter	25	A
118-5	Piece Assortment Set	25	A
118-6	Powered Drill/Driver	10	A

Equipment List Requested

Code No.	Equipment Name	Q'ty	Priority
118-7	Bandsaw	1	B
118-8	Vise	5	A
118-9	Vise	5	A
118-10	Helping Hand	25	A
118-11	Soldering Pen	25	A
118-12	Computer Toolkit	25	A
118-13	Machining System	1	A
118-14	Milling Cutter Set	1	A
118-15	Milling Cutter Set	1	A
118-16	Collets	1	A
118-17	Collets	1	A
118-18	Bench Drill Machine	1	A
118-19	Arduino UNO	300	A
118-20	Mini Computer	100	A
118-21	USB Cable	300	A
118-22	Circuit Board, Beagle	100	A
118-23	Wire Set (Breadboard)	100	A
118-24	Wire	500	A
118-25	Crocodile Clip	1000	A
118-26	Soldering Iron	100	A
118-27	LED Red	100	A
118-28	LED Green	100	A
118-29	LED Blue	100	A
118-30	Resistance	100	A
118-31	Resistance	100	A
118-32	Resistance	100	A
118-33	Resistance	200	A
118-34	DC Motor Drive IC	600	A
118-35	Ceramic Condenser	300	A
118-36	Ceramic Condenser	300	A
118-37	DC Motor	400	A
118-38	Battery	100	A
118-39	Battery	100	A
118-40	Recharger	100	A
118-41	Recharger	100	A
118-42	SnapFit	500	A
118-43	Proximity Sensor	200	A
118-44	Tact Switch	1000	A
118-45	DC Jack	100	A
118-46	DC Plug	100	A
118-47	Universal Plate	100	A
118-48	Motor GearBox	100	A
118-49	Motor GearBox	100	A
118-50	Tier Set	200	A
118-51	Tracktor set	100	A
118-52	Servo	200	A
118-53	Universal Plate	200	A
118-54	Infrared LED	300	A
118-55	Infrared Receiver	300	A
118-56	Accelerometer	100	A
118-57	Gyroscope	100	A
118-58	Compass Module	100	A
118-59	Radar	100	A
118-60	Tilt Module	100	B

Equipment List Requested

Code No.	Equipment Name	Q'ty	Priority
118-61	Color Sensor	100	A
118-62	Linear Light Sensor	200	C
118-63	Photoresistor	500	C
118-64	Xbee	200	A
118-65	Xbee Pitch	200	A
118-66	Xbee USB Interface	200	A
118-67	USB Cable (Micro)	200	A
118-68	Electronic Buzzer Module	100	C
118-69	JPEG Camera	100	B
118-70	Micro Servo	200	A
118-71	Ultrasonic Sensor	200	A
118-72	Chest-Drawer Tray	25	B
118-73	3D Printer	1	A
32. Sensors and Actuators Lab.			
32-1	Digital Phosphor Oscilloscope	5	A
32-2	Arbitrary Function Generators	5	A
32-3	Wire Set (Breadboard)	20	A
32-4	Circuit board, Beagle	20	A
32-5	Circuit board, Beagle	20	A
32-6	Multimeter	20	A
32-7	Motors	20	A
32-8	Motor Controller	20	A
32-9	Lidar	20	A
32-10	Proxomity Sensor	20	A
32-11	Xbee	20	A
32-12	Xbee Xplorer USB	20	A
32-13	Ultrasonic Sensor	20	A
32-14	Servo	20	A
32-15	Continuous Servo	20	A
32-16	Accelerometer	20	A
32-17	Gyroscope	20	A
32-18	Magnetometer	20	A
32-19	Accelerometer	20	A
32-20	IMU Sensor	2	A
32-21	Arduino UNO R3	20	A
32-22	Microcontroller	20	A
32-23	RaspberryPi	20	A
32-24	RaspberryPi Camera	20	A
32-25	Hokuyo Range Finder	2	A
32-26	Hokuyo Range Finder	1	A
32-27	Speed and Direction Sensor	20	A
32-28	GPS Data Logger	20	B
32-29	GPS Circuit	20	A
32-30	Temperature, Humidity, USB	20	B
32-31	Temperature Sensor	20	B
32-32	Humidity Sensor	20	B
32-33	Humidity, Atmospheric Pressure Sensor	20	B
32-34	Atmospheric Pressure	20	B
32-35	Cds	20	A
32-36	Photo transistor	20	B
32-37	Ambient Light Sensor	20	A
32-38	Infrared Receptor	20	A
32-39	Pyroelectric Sensor	20	C
32-40	Color and Illumination Sensor	20	A

Equipment List Requested

Code No.	Equipment Name	Q'ty	Priority
32-41	Color Sensor	20	A
32-42	Digital Color Sensor	20	A
32-43	UV Sensor	20	C
32-44	Photo Diode	20	B
32-45	Photo Reflector	20	B
32-46	Photo Interrupter	20	C
32-47	Digital Microphone	20	B
32-48	CO and Methane	20	C
32-49	Hall Sensor	40	A
32-50	Tilt Sensor	20	A
32-51	Pressure Sensor	20	A
32-52	4-D Tilt Sensor	20	A
32-53	Continuous Rotation Servo	20	A
32-54	Altimeter	20	A
32-55	QTI Sensor	20	A
32-56	Motion Sensor	20	B
32-57	Flexi Force Sensor	20	A
32-58	Liquid level Sensor	20	B
32-59	Chemical level Sensor	20	C
32-60	Sound Impact Sensor	20	B
32-61	Piezo Film sensor	20	A
32-62	CO Sensor	20	C
32-63	Methane Sensor	20	C
32-64	Propane Sensor	20	C
32-65	Alcohol / Benzine Sensor	20	C
32-66	Laser Range Finder	3	A
32-67	Firgelli Linear Actuator	20	A
32-68	Large Linear Actuator	20	A
32-69	Dual Linear Actuator Controller	10	A
32-70	Linear Actuator Mounting Bracket	20	A
32-71	Solenoid (5V)	20	A
32-72	Solenoid (Push, Pull)	20	A
32-73	Switching Adapter	20	B
32-74	Switching Adapter	20	B
32-75	Switching Adapter	20	B
32-76	Variable Switching Adapter	20	C
32-77	Force Sensitive Resistor	20	A
32-78	FlexiForce Adapter	20	A
32-79	Bipolar Gearless Stepper	20	A
32-80	Bipolar Stepper Motor Controller	20	A
32-81	Unipolar Stepper Motor	20	A
32-82	Unipolar Stepper Motor Controller	20	A
32-83	Electromagnet	20	A
32-84	Micro USB Cable	20	B
32-85	Mini USB Cable	20	B
32-86	USB Cable	20	B
32-87	Micro SD Module	20	B
32-88	Magnetic Sensor	20	A
32-89	SD Card Shield	20	B
32-90	Open Parts Library	1	B
32-91	Precision Voltage Sensor	20	C
32-92	Phdiget Sensor Cable	20	C
32-93	Sound Sensor	20	B
32-94	Light Sensor	20	B

Equipment List Requested

Code No.	Equipment Name	Q'ty	Priority
32-95	Phdiget Sensor Bridget	5	C
32-96	Micro Load Cell	20	A
32-97	Button Load Cell	20	A
32-98	S Type Load Cell	20	A
32-99	Full-Bridge Aluminum Strain Gauge	20	A
32-100	Half-Bridge Aluminum Strain Gauge	20	A
32-101	Water Sensor	20	B
32-102	Linear Potentiometer	20	A
32-103	Draw Wire Potentiometer	20	A
32-104	Rotary Potentiometer	20	A
32-105	Slider	20	B
32-106	Multi-Turn Rotation Sensor	20	A
32-107	RFID Kit	20	A
32-108	Capacicity Proximity Sensor	20	A
32-109	Inductive Proximity Sensor	20	A
32-110	Magnetic Contact Switch	20	B
32-111	Linear Touch	20	B
32-112	Circular Touch	20	B
32-113	Linear Actuator	20	A
32-114	Phdiget Motor Control	20	A
32-115	Optical Rotary Encoder	20	A
32-116	EMG Sensor	20	A
32-117	Dust Sensor	20	C
32-118	Flame Sensor	20	A
32-119	Bipolar Stepper Motor (Gearless)	20	A
32-120	Power Supply 15-30V	20	A
32-121	Power Supply 12-18V	20	A
32-122	Solar Panel (Portable)	20	B
32-123	Kinect	5	A
32-124	Oculus Rift	5	A
32-125	Leap Motion	5	A
32-126	Chest-Drawer Tray	20	B
32-127	Brain Computer Interface	5	A
32-128	Bluetooth Mate	20	A
33. Mechatronics and Robotics Lab.			
33-1	Robot Arm	5	A
33-2	Aerial Vehicle	5	A
33-3	Humanoid Robot Kit	5	A
33-4	Universal Mechanism Kit	5	A
33-5	Pneumatics and Electro-Pneumatics System	5	A
33-6	DC Transport System Workstation	3	A
33-7	AC Transport System Workstation	3	B
33-8	Sorting Station	1	A
33-9	Assembly Station	1	A
33-10	Processing Station	1	A
33-11	Testing Station	1	A
33-12	Handling Station	1	A
33-13	Storage Station	1	A
33-14	Routing Station	1	A
33-15	Buffering Station	1	A
33-16	Disassembly by Robot Station	1	A
33-17	Production Line with 3/4 Subsystems	1	B
33-18	Robot Technology for Mechatronics Applications	1	B
33-19	Assembly Technology Training Set	1	A

Equipment List Requested

Code No.	Equipment Name	Q'ty	Priority
33-20	IMS Sensor Case	1	A
33-21	IMS Virtual Package	1	A
33-22	Robot Modules	10	A
111. MSE PBL			
111-1	Equipment for MSE PBL	1	A
34. Materials Testing and Characterization Lab.			
34-1	Rockwell Hardness Tester	1	A
34-2	Vickers Hardness Tester	1	A
34-3	Friction and Wear Testing Machine	1	A
34-4	Hydraulic Universal Material Tester, 50kN	1	A
34-5	Ultrasonic Flaw Detector	5	A
34-6	Benchtop XRD	1	A
34-7	Upright Microscope	5	A
34-8	Benchtop SEM	1	A
34-9	Sterioscope	5	A
34-10	DSC/TGA	2	A
34-11	Dilatometer	2	A
34-12	Rheometer	1	A
34-13	UV/ Vis Spectrophotometer	1	A
34-14	FT-IR Spectrometer	1	A
34-15	Benchtop OES Metal Analyzers	1	A
34-16	Four(or two) Point Probe	1	A
34-17	Mechanical Polishing Machine	5	A
34-18	Compression Mounting	3	A
34-19	Balances	5	A
34-20	Fatigue Testing Machine	1	A
34-21	Creep Testing Machine	3	A
34-22	Environmental Test Champer	1	A
34-23	QUV Accelerated Weather Tester	1	A
35. Materials Processing Lab.			
35-1	Ball Milling	5	A
35-2	Mixer	5	A
35-3	Thieves	5	A
35-4	Hydraulic Presses	5	A
35-5	Induction Furnace (100gm)	5	A
35-6	Potentiostate and Galvanostate	5	A
35-7	Refrigerator and Frezeer	1	A
35-8	Electric Balance	5	A
35-9	Muffel Furnace	5	A
35-10	Rolling Machine	2	A
35-11	Cutting Machine	2	A
35-12	Fume Hood	3	A
35-13	Vaccum Tube Furnace	3	A
35-14	Dry Oven	2	A
35-15	Hot Plate	10	A
35-16	Ice Making Machine	1	A
35-17	Quartz Double Water Distiller	2	A
35-18	Automatic Potential Titrator	10	A
35-19	Heated Ultrasonic Cleaner	5	A
35-20	Homogeniser	3	A
35-21	Centrifuge	3	A
35-23	Hydraulic Lamination Hot Press	2	A
35-24	Twin Screw Extruders for Lab.	1	A
35-25	Single Screw Extruder for Lab.	1	A

Equipment List Requested

Code No.	Equipment Name	Q'ty	Priority
35-26	Melt spinning Machine	1	A
37. ECE PBL / 17. Data + Communications			
37-1	Computer Interface Base Unit	24	A
37-2	Digital Storage Oscilloscope	12	A
37-3	Function Generator	12	A
37-4	Digital Multimter	12	A
37-5	Matlab & Simulink Software	24	A
37-6	Java Development Software	12	A
37-7	Raspberry Pi processor	24	A
37-8	ETTUS USRP Bundle	6	A
37-9	Android Tablet	12	A
37-10	Android Mobile	12	A
37-11	Opnet Moduler	6	A
37-12	WSN dev Kit Freescale	12	A
36. Advanced Electronics			
36-1	Operational Amplifier Circuit Trainer	12	A
36-2	Electronics Demonstration System	12	A
36-3	Function Generator	12	A
36-4	Digital Multimeter	12	A
36-5	Digital Storage Oscilloscope	12	A
36-6	DC Power Supply	12	A
38. Optical Comm			
38-1	Fiber Optics Educational Kit	5	A
38-2	Fiber Cleaver	5	B
38-3	Scientific Grade Optical Breadboard	10	A
38-4	Single-Mode Fiber Optics "A"	5	A
38-5	Single Mode Fiber Optics "B"	5	A
38-6	DC Power Supply	5	A
38-7	OptiSystem Perpetual Software "A"	1	A
38-8	OptiSpice Perpetual Software "B"	1	B
38-9	Optical Fusion Fiber Splicing Kit	1	A
38-10	Optical Time-Domain Reflectometer	1	A
38-11	Multi Media Desktop Indicator	5	C
39. Solid State			
39-1	Electronics Demonstration System	12	A
39-2	Electronics Demonstration System	12	A
40. RF Circuits			
40-1	Vector Signal Generator	1	A
40-2	Internal Modulation Generator for Vector Signal Generator	1	A
40-3	Pulse Modulation for Vector Signal Generator	1	A
40-4	RF Cable for Vector Signal Generator	1	A
40-5	Signal Aanalyzer	1	B
40-6	Phase Noise for Signal Aanalyzer	1	B
40-7	Pulse Measurenment Unit for Signal Aanalyzer	1	B
40-8	Noise Figure Measurenment Unit for Signal Aanalyzer	1	B
40-9	Flexible Cable Set for Signal Aanalyzer	1	B
40-10	Vector Network Analyzer	1	A
40-11	Frequency Offset for Vector Network Analyzer	1	A
40-12	Calibration Kit "A" for Vector Network Analyzer	1	A
40-13	Calibration Kit "B" for Vector Network Analyzer	1	A
40-14	Flexible Cables for Vector Network Analyzer	1	A
40-15	Adapters for Vector Network Analyzer	1	A
40-16	DC Power Supply	12	A
40-17	Function Generator	12	A

Equipment List Requested

Code No.	Equipment Name	Q'ty	Priority
40-18	Digital Multimeter	12	A
40-19	Digital Storage Oscilloscope	12	A
40-20	AM Transceiver	4	A
40-21	RF System Design Kit	4	A
40-22	FM Transceiver	4	A
40-23	Probe with Connector	2	B
40-24	ISS,Wide Band GSG Assembly	1	C
40-25	Cable Test Port	1	C
40-26	Installation Kit	1	C
40-27	Positioner	1	A
40-28	Extender	1	C
14. Electronics			
14-1	LN Basic Electronics lab	12	A
41. Microwaves & Antenna			
41-1	Antenna Training and Measuring System "A"	1	A
41-2	Antenna Training and Measuring System "B"	1	A
41-3	Anechoic Chamber for Antenna Measurement	1	A
41-4	Vector Network Analyzer	1	A
41-5	Calibration Kit for Vector Network Analyzer	1	A
41-6	Adapter "A" for Vector Network Analyzer	4	A
41-7	Adapter "B" for Vector Network Analyzer	4	A
41-8	Adapter "C" for Vector Network Analyzer	4	A
41-9	Adapter "D" for Vector Network Analyzer	4	A
41-10	Adapter "E" for Vector Network Analyzer	4	A
41-11	Adapter "F" for Vector Network Analyzer	4	A
41-12	RF cable "A" for Vector Network Analyzer	2	A
41-13	RF cable "B" for Vector Network Analyzer	2	A
41-14	RF cable "C" for Vector Network Analyzer	2	A
41-15	Circular Polarized Antennas	1	A
41-16	Horn Antenna	1	A
41-17	Personal Computer	3	A
18. Digital Systems + DSP			
18-1	Personal Computer	28	A
18-2	Electronics Circuits Lab	14	A
18-3	Digital Systems Kit	14	A
18-4	Digital Pattern Generator	3	A
18-5	Logic Analyzer	3	A
18-6	Spectrum Analyzer	3	A
18-7	Embedded Vision Starter Kit	24	A
18-8	DSP Starter Kit	24	A
18-9	DSP Starter Kit	24	A
18-10	Matlab & Simulink Sftware	24	B
18-11	Development Board	14	B
18-12	Starter Platform	14	B
15. Microprocessor			
15-1	Personal Computer	28	A
15-2	Package for Electronics Circuits Lab	14	A
15-3	Microprocessors and Microcontroller Kit	14	A
15-4	Digital Pattern Generator	3	A
15-5	Logic Analyzer	3	A
15-6	Raspberry PI Kit	14	B
15-7	Arduino Kit	14	B
15-8	NVIDIA Jetson TK1 Development Kit	14	B
98. EPE PBL			

Equipment List Requested

Code No.	Equipment Name	Q'ty	Priority
98-1	Basics Interface Unit	8	A
98-2	Three-Phase Technology Unit	2	A
98-3	Magnetism / Electromagnetism Unit	2	A
98-4	Photovoltaics Unit	2	A
98-5	Transient Processes in AC and DC Networks	2	A
42. Power Electronics			
42-1	Basics Interface Unit	8	A
42-2	Line-Commutated Power Converters, 3-Phase	2	A
42-3	Self-Commutated Power Converters	2	A
42-4	Frequency Converter Drives	2	A
42-5	Active Power Factor Correction Unit	2	A
42-6	Line Commutated Converter Circuits 300W	2	A
42-7	Self-commutated converter circuits 300W	2	A
42-8	Field-oriented control of asynchronous machine	2	A
94. Electrical Machines Lab.			
94-5	Basics Interface Unit	14	A
94-6	Basics of DC Machines	2	A
94-7	Asynchrounous Machines	2	A
94-8	Synchronous Motors and Generators	2	A
94-9	Stepper Motors	2	A
94-10	Linear Motors	2	B
94-11	BLDC/Servo Motors	2	B
94-12	Three Phase Transformers	2	A
94-13	DC Machines 300W	2	A
94-14	Three-Phase Motor with Slip-Rings	2	A
94-15	Synchronous Machines 300W	2	A
95. Switch Gear and Protection			
95-1	Investigations on Three-Phase Transmission Lines	2	A
95-2	Directional Overcurrent Time Protection for Lines	1	A
95-3	Overvoltage and Undervoltage Protection	1	A
95-4	Earth Fault Protection	1	A
95-5	Power Protection	1	B
95-6	Motor Management Relays	1	A
95-7	Contactor Circuits in Three-Phase Systems	1	A
96. Power Systems Analysis Lab.			
96-1	Manually operated synchronising circuits	1	A
96-2	Automatic synchronising circuits	1	A
96-3	Investigations on Three-phase Transmission Lines	1	A
96-4	Combined networks of cables and lines	1	A
96-5	Directional overcurrent time protection for lines	1	A
96-6	Busbar systems	1	A
96-7	Complex loads, power consumption measurement	1	A
96-8	Dynamic loads	1	A
19. CSE PBL			
19-1	Printer	5	A
19-2	Flat Panel	20	A
19-3	LCD Projectors	20	A
43. Computing Workshop			
43-1	Laser Rangefinder	4	A
43-2	Data acquisition cards	4	A
43-3	Cameras for Windows	5	A
43-4	Illumination Sensors	4	A
43-5	IP Camera "A"	4	A
43-6	IP Camera "B"	4	A

Equipment List Requested

Code No.	Equipment Name	Q'ty	Priority
43-7	GPS Sensor	4	A
43-8	Pressure sensor	4	A
43-9	Ultrasonic Sensor	4	A
43-10	Ultrasonic Distance Sensor	4	A
43-11	Khe3Base Kit with Board	2	A
43-12	Laser Range Finders with LRF Module	2	A
43-13	RC Programmable Helicopters	10	A
43-14	Laptop Computer MAC-Based	10	A
43-15	Laptop Computer Windows-Based	10	A
43-16	Tablet MAC-Based	10	A
43-17	G2D79EA Tablet Android-based	10	A
43-18	Light Field Camera	2	A
43-19	Camcorder	1	A
43-20	Digital Camera SLR	1	A
43-21	Robot "A"	10	A
43-22	Robotic Ball	10	A
43-23	Ollie Robot	10	A
43-24	Robot "B"	10	A
43-25	Surface Computer	3	A
43-26	3D Printer	5	A
44. Cloud Computing			
44-1	Blade Units	9	A
57. CPE PBL			
57.1-1	Inductive Coupled Plasma System	1	A
57.1-2	UV/vis Spectrophotometer	1	A
57.1-3	FT-IR	1	A
57.1-4	Atomic Absorption	2	A
57.1-5	Oven Furnace	3	A
57.1-6	Mufful Furnace	3	A
57.1-7	Thermo-Gravimetric Analyzer	1	B
57.1-8	Electric Balance	6	A
57.1-9	Analytical Balance	2	A
57.1-10	Bench Top pH Meter	14	A
57.1-11	Magnetic Stirrer Hot Plat	7	A
57.1-12	Circulating Water Bath	7	A
57.1-13	Shaking Water Bath	7	A
57.1-14	Fluidized Sand Bath	2	A
57.1-15	Shaking Incubator	5	A
57.1-16	High Speed Centrifuge	5	A
57.1-17	Rotary Evaporator	5	A
57.1-18	X-Ray Fluorescence	1	C
45. Physical Chemistry and Reaction Kinetics and Catalysis Lab.			
45-1	Liquid Diffusion Coefficient Apparatus	3	A
45-2	Chemical Reactors Apparatus	2	A
45-3	Batch Reaction Pilot Plant	2	A
45-4	Three-Phase Catalytic Reactor	2	A
45-5	Liquid Vapolation Enthalpy Mearure	3	A
45-6	Atomic Absorption	3	A
45-7	Gas and Critical Point Unit	3	B
45-8	Biodiesel Production Pilot Plant	2	B
45-9	Mixing Enthalpy of Binary Mixtures Unit	2	B
45-10	Boiling Point Eclevation in a Solution	3	B
45-11	Bomb Calorymeter Unit	3	B
45-12	Heat of Water Formation Unit	3	B

Equipment List Requested

Code No.	Equipment Name	Q'ty	Priority
45-13	Screw Press for Extrating Oil	1	B
46. Chemical Process Technology Lab.-1			
46-1	Solid-Liquid Extraction Unit	1	A
46-2	Service Unit of Water Treatment Pilot Plant	3	A
46-3	Anaerobic Water Treatment Pilot Plant	3	A
46-4	Aerobic Water Treatment Pilot Plant	3	A
46-5	Reserve Osmosis Pilot Plant	1	A
46-6	Coagulation, Flocculation and Settling Point Plant	1	B
46-7	Chemical Reactors Teaching Equipment	1	A
46-8	Vacuum Freeze Dryer	1	B
46-9	UV/vis Spectrophotometer	3	B
46-10	Aatomic Absorption	3	C
47. Corrosion & Electrochemistry Lab.			
47-1	Potentiostat Unit	3	A
47-2	Fuel Cell Trainer	3	A
47-3	Corrosion Studies Kit	3	A
47-4	Electrochemical Expertimens system	3	A
47-5	Resistivity Measurment System	1	C
48. Chemical Engineering Process Control Lab.			
48-1	Level Control Process	3	A
48-2	Flow Control Process	3	A
48-3	Pressure Control Process	3	A
48-4	Temperature Control Process	3	A
48-5	Comsol	1	A
48-6	Industrial PID Controller	1	B
48-7	Multifunction Process Control Teaching System	1	B
48-8	Industrial PLC Unit	1	C
72. Petrochemical Lab.			
72-1	Boyle's Law Trainer	3	A
72-2	Gay-lussac's Law Trainer	3	A
72-3	Oil Density Meter	3	A
72-4	Oil Viscosity Meter	3	A
72-5	Pour Point Koehler Cloud and Pour Point Bath	3	A
72-6	Pensky Martens Flash Point Tester	3	A
72-7	Sulphure Content	3	B
72-8	Ash Content	1	B
72-9	UV/Visible Spectrophotometer	3	A
59. Unit Operation Lab.			
59-1	Wet Cooling Tower	4	A
59-2	Cooling Column, Type 2	4	A
59-3	Cooling Column, Type 3	4	A
59-4	Cooling Column, Type 4	4	A
59-5	Cooling Column, Type 5	4	A
59-6	Change of State of Gases	2	A
70. ERE PBL			
70-1	Wet Cooling Tower	4	A
70-2	Cooling Column, Type 2	4	A
70-3	Cooling Column, Type 3	4	A
70-4	Cooling Column, Type 4	4	A
70-5	Cooling Column, Type 5	4	A
70-6	Change of State of Gases	2	A
49. Renewable Energy			
49-1	Basics Renewable Energy Trainer	4	A
49-2	Basic Photovoltaics Unit	4	A

Equipment List Requested

Code No.	Equipment Name	Q'ty	Priority
49-3	Basic Fuel Cell Technology Unit	4	A
49-4	Small Wind Power Plant	1	A
49-5	Wind Power Plant System	1	A
49-6	Advanced Photovoltaics System	1	A
49-7	Advanced Fuel Cell Technology Training System	1	A
50. Fuel			
50-1	Modular Test Stand for Single Cylinder Engines, 2.2kW	3	A
50-2	Electronic Engine Indicating System	3	A
50-3	Exhaust Gas Analysing Unit	3	A
50-4	Pressure Transducer and TDC Sensor for Petrol Engine	3	A
50-5	Pressure Transducer and TDC Sensor for Diesel Engine	3	A
50-6	Four-Stroke Petrol Engine for Modular Test Stand	2	A
50-7	Four-Stroke Diesel Engine for Modular Test Stand	2	A
50-8	Universal Drive and Brake Unit	2	A
51. Thermo - Fluids			
51-1	Air Conditioning System Model	1	A
51-2	Software Controller with Data Acquisition	1	A
51-3	Air Conditioning Controller	1	A
51-4	I/O Connection Box	1	A
51-5	Ice Stores in Refrigeration	1	A
51-6	Capacity Control and Faults in Refrigeration Systems	1	A
51-7	Absorption Refrigeration System	1	A
51-8	Heat exchanger supply unit	1	A
51-9	Tubular Heat Exchanger	1	A
51-10	Plate Heat Exchanger	1	A
51-11	Shell & Tube Heat Exchanger	1	A
51-12	Jacketed Vessel with Stirrer & Coil	1	A
51-13	Water Chiller for Heat Exchanger	1	A
51-14	Base Module for Experiments in Fluid Mechanics	1	A
51-15	Pipe Friction for Laminar / Turbulent Flow	1	A
51-16	Bernoulli's Principle	1	A
51-17	Horizontal Flow from a Tank	1	A
51-18	Visualisation of Streamlines	1	A
51-19	Vertical Flow from a Tank	1	A
51-20	Methods of Flow Measurement	1	A
51-21	Osborne Reynolds Experiment	1	A
51-22	Heat Transfer by Convection	1	A
51-23	Thermal Radiation Unit	1	A
51-24	Heat Transfer by Conduction	1	A
52. Alternative Energy			
52.1	Clean Energy Trainer	2	A
52.2	Fuel Cell System	1	A
52.3	Fuel Cell Trainer	2	A
52.4	Solar Hydrogen Extension	1	A
52.5	Principles of Solar Thermal Energy	1	A
52.6	Solar Module Measurements	1	A
52.7	Photovoltaic in Grid-connected Operation	1	A
52.8	Stand Alone Operation of Photovoltaic Modules	1	A
52.9	Domestic Water Heating with Flat Collector	1	A
52.10	Artificial Light Source	3	A
52.11	Energy Conversion in a Wind Power Plant	1	A
52.12	Wind Power Plant	1	A

Minutes of Discussions
on
the Preparatory Survey
for
the Project
for
Procurement of Education and Research Equipment
for
Egypt-Japan University of Science and Technology
(Explanation on Draft Preparatory Survey Report)

On the basis of the discussions in the Arab Republic of Egypt (hereinafter referred to as "Egypt") signed as the Minutes of Discussions between Mr. Daisuke Ueda, the Director of Technical and Higher Education Team of Human Development, Japan International Cooperation Agency (hereinafter referred to as "JICA") and Professor El-Gohary, the President of Egypt-Japan University of Science and Technology (hereinafter referred to as "E-JUST") on October 20, 2015, and the subsequent technical examination of the results in Japan, JICA prepared a draft Preparatory Survey Report (hereinafter referred to as "the Draft Report") on the Project for Procurement of Education and Research Equipment for Egypt-Japan University of Science and Technology (hereinafter referred to as "the Project").

In order to explain the Draft Report and to consult with the concerned officials of the Government of Egypt on its contents, JICA sent to Egypt the Preparatory Survey Team for the explanation of the Draft Report (hereinafter referred to as "the Team"), headed by Mr. Daisuke Ueda and is scheduled to stay in the country from January 11th to January 28th, 2016.

As a result of the discussions, both sides confirmed the main items described in the attached sheets.

Cairo, January 24, 2016

Mr. Daisuke Ueda
Leader
Preparatory Survey Team
Japan International Cooperation Agency
Japan

Prof. Ahmad El-Gohary
President
Egypt-Japan University of
Science and Technology
Arab Republic of Egypt

Witnessed by

Mrs. Mona S. Ahmed
Undersecretary of State for
East-Asia Countries
Ministry of International Cooperation
Arab Republic of Egypt

Prof. Hossam El-Malehy
First Undersecretary of State
Head of Cultural Affairs & Mission Sector
Ministry of Higher Education and Scientific Research
Arab Republic of Egypt

ATTACHMENT

1. Objective of the Project

The objective of the Project is to support the quality of undergraduate program of the Faculty of Engineering (hereinafter referred to as "the Undergraduate Program") based on practical education through experiments, practices, and researches by procuring education and research equipment, thereby contributing to nurturing of human resources for industrial and social development in Egypt.

2. Title of the Preparatory Survey

Both sides confirmed the title of the Preparatory Survey as "the Preparatory Survey for the Project for Procurement of Education and Research Equipment for Egypt-Japan University of Science and Technology."

3. Project Site

Both sides confirmed that the site of the Project is in New Borg Al-Arab City, which is shown in Annex 1.

4. Line Ministry and Executing Agency

Both sides confirmed the line ministry and the executing agency as follows:

4-1. The line ministry is Ministry of Higher Education and Scientific Research (hereinafter referred to as "MoHE"), which would be the ministry to supervise the executing agency.

4-2. The executing agency is E-JUST. The executing agency shall coordinate with all the relevant agencies to ensure smooth implementation of the Project and ensure that the undertakings are taken by relevant agencies properly and on time. The organization charts are shown in Annex 2.

4-3 The coordinating ministry is Ministry of International Cooperation (hereinafter referred to as "MoIC").

5. Target Department

All departments under the Undergraduate Program (of the Faculty of Engineering) of E-JUST, which are listed below, are the target departments of the Project. The name of the departments are tentative and subject to change upon the primary approval by the Supreme Council of Universities (hereinafter referred to as "SCU").

(1) Department of Electronics and Communications Engineering (ECE)
(2) Department of Computer Science and Engineering (CSE)
(3) Department of Electrical Power Engineering (EPE)
(4) Department of Industrial and Manufacturing Engineering (IME)
(5) Department of Mechatronics Engineering (MTE)
(6) Department of Materials Science and Engineering (MSE)
(7) Department of Energy Resources Engineering (ERE)
(8) Department of Chemical and Petrochemicals Engineering (CPE)

6. Contents of the Draft Report

The Team explained the contents of the Draft Report to E-JUST as per Annex 3. E-JUST agreed in principle to its contents.

7. Cost Estimation

Both sides confirmed that the Project cost estimation described in the Draft Final Report. The cost is provisional and would be examined further by the Government of Japan for its final approval.

8. Confidentiality of the Cost Estimation and Specifications

Both sides confirmed that the Project cost estimation and technical specifications in the Draft Report should never be duplicated or disclosed to any third parties until all the contracts of the Project are concluded.

9. Japanese Grant Scheme

E-JUST understood the Japanese Grant Scheme and its procedures as described in Annex 4, Annex 5 and Annex 6, and necessary measures to be taken by the Government of Egypt.

10. Project Implementation Schedule

Both sides confirmed the schedule for the commencement of the Undergraduate Program as per Annex 7 and the schedule of the new campus construction as per Annex 8. The Team explained to E-JUST the expected project implementation schedule as per Annex 9 and E-JUST understood it.

11. Expected Outcomes and Indicators

Both sides agreed that key indicators for the expected outcomes are as follows. The

Egyptian side has responsibility to monitor the progress of the indicators and achieve the target in year 2021.

[Quantitative Effect]

Indicators	Base Year (2017)	Target Year (2021, 4 years after project completion)
Number of Students in the Undergraduate Program (*)	500	2,000
Ratio of practical classes (experiment, practices, and research works) in the target departments (*)	18.6 %	32.8%

(*) The number is subject to the plan and progress of the Undergraduate Program preparation by E-JUST.

[Qualitative Effect]

- Graduates of E-JUST will have high rate of employability in the industrial field in Egypt
- The trend of the number of applicants to the Undergraduate Program will be increasing

12. Undertakings to be Taken by Both Sides

Both sides confirmed the undertakings to be taken by both side as described in Annex 10. The Egyptian side assured to take the necessary measures and coordination including allocation of the necessary budget which were preconditions of implementation of the Project. It is further agreed that the project cost estimation is indicative, i.e. at outline design level. More accurate costs will be calculated at the detailed design stage.

13. Monitoring during the Implementation

The Project will be monitored and reported every month by the executing agency and using the Project Monitoring Report (PMR) as per Annex 11.

14. Ex-Post Evaluation

JICA will conduct ex-post evaluation three (3) years after the project completion

with respect to five evaluation criteria (Relevance, Effectiveness, Efficiency, Impact, Sustainability) of the Project. Result of the evaluation will be publicized. The Egyptian side is required to provide necessary support for the evaluation.

15. Issues to be Considered for the Smooth Implementation of the Project

E-JUST reconfirmed the project site will be cleared before the commencement of instalment of the equipment of the Project.

16. Schedule of the Study

The Team will complete the Final Report of the Preparatory Survey in accordance with the confirmed items and send it to the Egyptian side around May 2016.

17. Environmental and Social Considerations

The Project is likely to have minimal adverse impact on the environment under the 'JICA Guidelines for Environmental and Social Considerations (April 2010)'.

18. Other Relevant Issues

18-1. Submission of the Application of Undergraduate Program

E-JUST will submit the application of the Undergraduate Program to SCU to obtain the official permission by the Government of Egypt in January 2016. E-JUST expects to obtain the primary approval of SCU by April 2016.

18-2. Budget Plan and Human Resource Allocation Plan

E-JUST explained to the Team that the budget plan for 2016/2017 which includes preparation for the Undergraduate Program was approved by the 12th BoT as per Annex 12-1 and submitted to Ministry of Finance. Furthermore, the human resource allocation plan in 2017 was formulated as per Annex 12-2.

18-3. Premises to Implement the Project

E-JUST and the Team reconfirmed that the Egyptian side must adhere to the plans stipulated in 18-1 and 18-2, since it is the premise to implement the Project. Hence, E-JUST committed to implement the plan without any delay. Moreover, both sides confirmed the Japanese side would not request the authorization of implementation of the Project to the Government of Japan unless E-JUST submits application of the Undergraduate Program to SCU. The Egyptian side understood that JICA would start the tender announcement of the equipment after the campus building construction (Phase 1) is started by the Egyptian side.

18-4. Equipment procured by the Project

18-4-1 Both sides confirmed the Equipment List as attached in Annex 13. The items or the quantity of items is subject to change in the detail design stage. Since the budget of the Government of Japan for the Project is limited, the Team prioritized the items from the requested equipment by the Egyptian side based on the following standards:

1) Equipment for 1st year and 2nd year students (Basic Science and Basic Engineering)
2) Safety equipment which was proposed by the Team
3) Equipment which requires pre-installation works by E-JUST

18-4-2 Both side confirmed the equipment which was originally listed in the application form but excluded from the Equipment List would be procured, paid and installed by E-JUST.

18-4-3 Both reconfirmed general and laboratory furniture, and office utilities would be excluded from the scope of the Project and borne by the Egyptian side.

18-4-4 Both side confirmed for some equipment listed in the Equipment List, E-JUST need to take measures to install. There are four categories as per Annex 14. More detailed information which describes item by item would be compiled in the Technical Notes which would be agreed among E-JUST, IAA and and the Team in March 2016.

18-5. Tax Exemption

The Egyptian side committed to ensure that customs duties be exempted under the responsibility of the Egyptian side, and internal taxes and other fiscal levies which may be imposed in Egypt with respect to the purchase of the Products and/or the Services be borne by its designated authority without using the Grant.

18-6. Banking Arrangement

18-6-1. The Government of the recipient country or its designated authority should open an account under the name of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). JICA will execute the Grant aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contract.

18-6-2. The payment will be made when payment requests are presented by the Bank to JICA under the Authorization to Pay (hereinafter referred to as "A/P") issued by the Government of the recipient country or its designated authority.

18-7. Operation and Maintenance of the Equipment

The Team explained the importance of operation and maintenance of the equipment procured by the Project considering that proper asset management would have great impacts on life-span of the equipment and its maintenance cost. The Egyptian side shall secure enough staff and budgets necessary for appropriate operation and maintenance of the equipment. The annual cost for consumables are estimated as 109 thousand EGP (approximately 1,676 thousand JPY) as shown in Annex 15.

18-8. Procurement of Equipment in the Third Countries

The Team explained that some equipment should be procured not from Japan but from the third countries, i.e. mainly European countries, in view of cost and promptness for operation and maintenance of equipment after installation. The Egyptian side agreed on the possibility and advantages of the procurement from the third countries.

18-9. Disclosure of Information

Both sides confirmed that the study results excluding the project cost estimation and technical specifications will be disclosed to the public after completion of the Preparatory Survey. All the survey results including the project cost will be disclosed to the public after all the contracts for the Project are concluded.

(end)

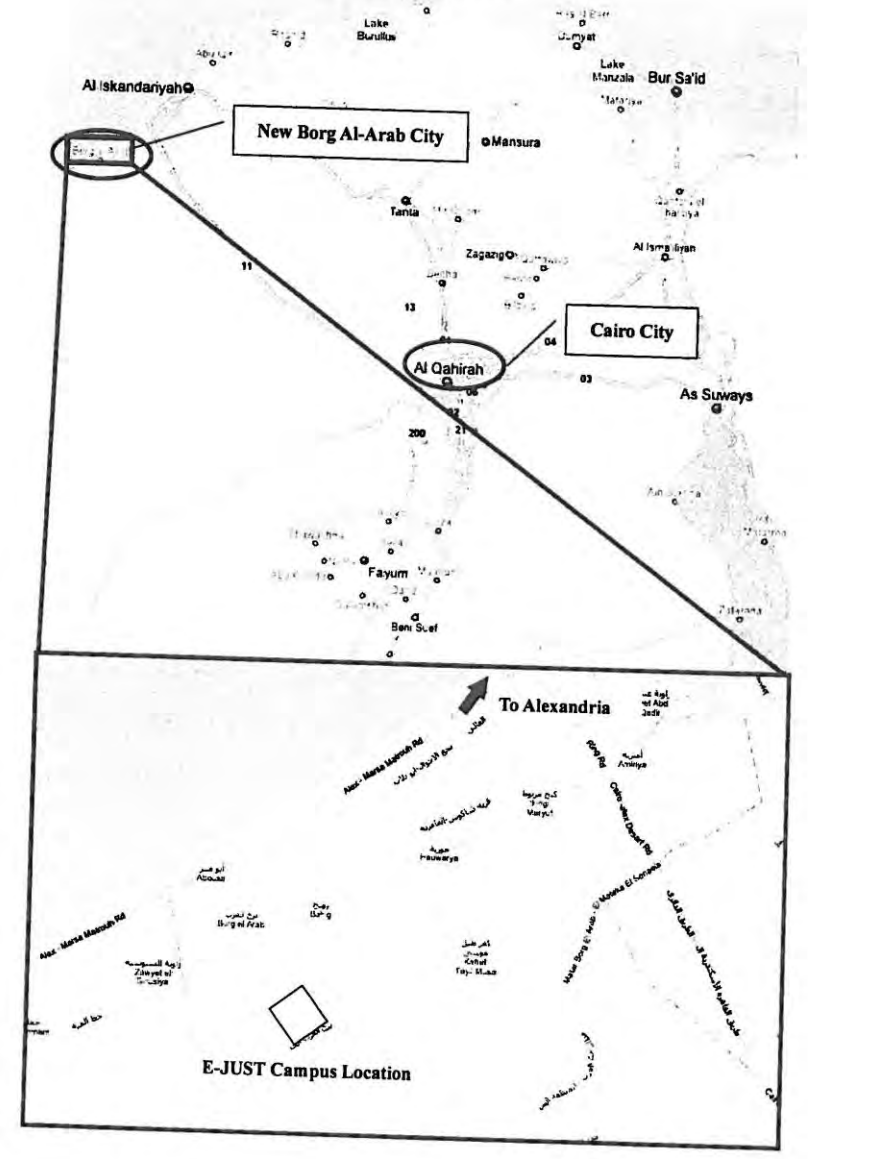
Annex 1 Project Site
Annex 2 Organization Chart
Annex 3 Draft Final Report
Annex 4 Japanese Grant
Annex 5 Flow Chart of Japanese Grant Procedures
Annex 6 Financial Flow of Japanese Grant
Annex 7 Schedule of Commencement of Undergraduate Programs
Annex 8 Schedule of New Campus Construction
Annex 9 Project Implementation Schedule
Annex 10 Major Undertakings to be Taken by Recipient Country and Covered by the Japanese Grant aid
Annex 11 Project Monitoring Report
Annex 12-1 Budget Plan of 2016/2017
Annex 12-2 Human Resource Allocation Plan from 2017 to 2021
Annex 13 Equipment List by the Project

Annex 14 Necessary Measures borne by E-JUST for the Equipment Installation

Annex 15 Operation and Maintenance Cost

Annex 1

Project Location



Annex 2

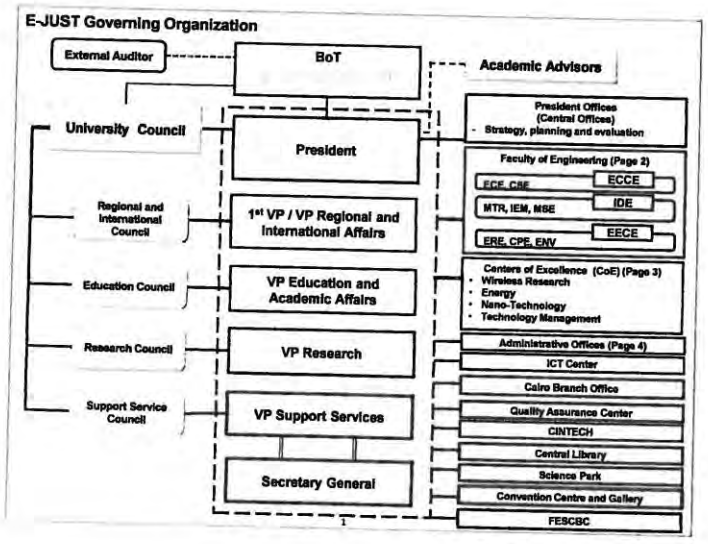
E-JUST

الجامعة المصرية اليابانية للعلوم والتكنولوجيا
EGYPT-JAPAN UNIVERSITY OF SCIENCE AND TECHNOLOGY
エジプト日本科学技術大学

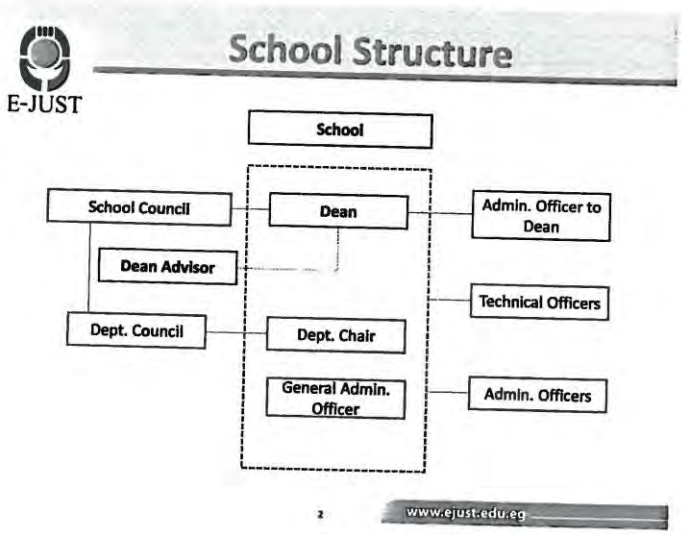
EJUST
Organization Structure

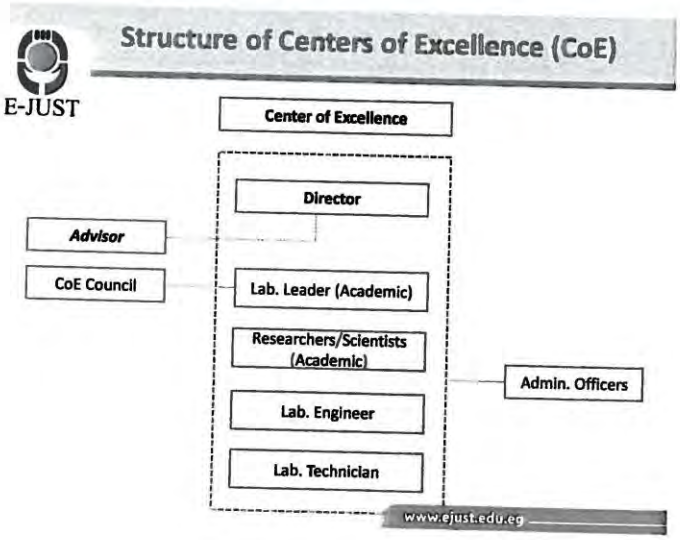
Approved by 11th BOT meeting
May 19th, 2015

جامعة بحثية مصرية .. ذات شراكة يابانية
EGYPTIAN RESEARCH-ORIENTED UNIVERSITY
WITH JAPANESE PARTNERSHIP
www.ejust.edu.eg

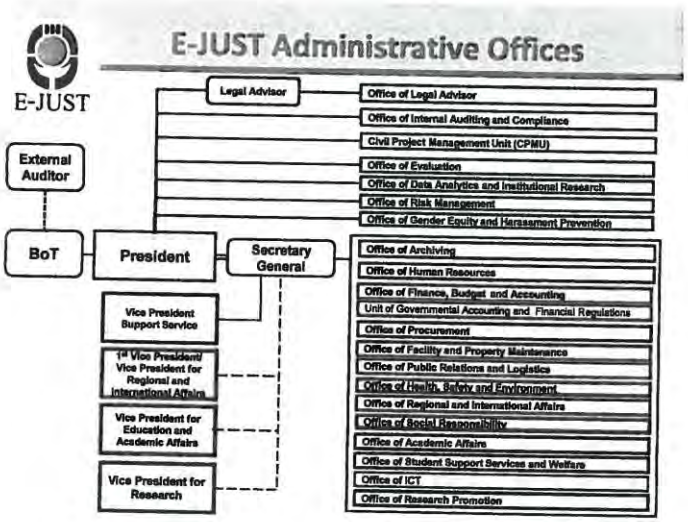


Annex 2


E-JUST
School Structure
School
School Council
Dean
Admin. Officer to Dean
Dean Advisor
Technical Officers
Dept. Council
Dept. Chair
General Admin. Officer
Admin. Officers
2
www.ejust.edu.eg


E-JUST
Structure of Centers of Excellence (CoE)
Center of Excellence
Director
Advisor
CoE Council
Lab. Leader (Academic)
Researchers/Scientists (Academic)
Admin. Officers
Lab. Engineer
Lab. Technician
www.ejust.edu.eg

Annex 2



Main roles of President and respective VPs

President and VPs	Offices in-charge
President	Office of Legal Advisor, Office of Internal Auditing and Compliance, Civil Project Management Unit (CPMU), Office of Evaluation, Office of Data Analytics and Institutional Research, Office of Risk Management, Office of Gender Equity and Harassment Prevention
1st VP / VP for Regional and International Affairs	Office of Regional and International Affairs, Office of Social Responsibility, CINTECH (liaison to Industries), Convention Centre and Gallery
VP for Educational and Academic Affairs	Office of Academic Affairs, Office of Student Support Services and Welfare
VP for Research (vacant)	Office of Research Promotion, CINTECH (except liaison to industries), Central Library, Science Park,
VP for Support Service	1. Finance and Accounting issues: Office of Finance, Budget and Accounting, Unit of Governmental Accounting and Financial Regulations, 2. Capacity Building issues: Faculty, Employee, and Student Capacity Building Centre (FESCBC), 3. Coordination with Secretary General before reporting to the President, 4. Receiving report from the Secretary General simultaneously submitted to the President, 5. ICT Center 6. Office of Archiving, Office of Human Resources, Office of Procurement, Office of Facility and Property Maintenance, Office of ICT (General Management and Support), Office of Public Relations and Logistics, Office of Health and Safety Environment, Cairo Branch Office.
Secretary General	Coordination and support for all administrative issues of E-JUST

Annex 3

Arab Republic of Egypt

The Project for Procurement of Education and Research Equipment for Egypt-Japan University of Science and Technology

Preparatory Survey Report
Draft

January, 2016

INTEM Consulting, Inc.

Contents

Chapter 1 Basic Concept of the Project

1-1 Overall Goals and Project Objectives

1-1-1 Overall Goals

The overall goals of the Project are to contribute to nurturing of human resorces for for industrial and social development in Egypt.

1-1-2 Objective of the Project

The objective of the Project is to support the quality of undergraduate program of the Faculty of Engineering (hereinafter referred to as "the Undergraduate Program") such as the Department of Electronics and Communication Engineering (ECE), the Department of Computer Science and Engineering (CSE), the Department of Electrical Power Engineering (EPE), the Department of Industrial and Manufacturing Engineering(IME), the Department of Mechatronics Engineering (MTE), the Department of Materials Science and Engieering (MSE), the Department of Energy Resources Engineering (ERE), and the Department of Chemical and Petrochemicals Engineering (CPE) based on practical education through experiments, practices, and researches by procuring education and research equipment.

1-2 Basic Concept of the Project

The Government of Egypt and Japan have concluded the bilateral agreement for the establishment of E-JUST in 2009 with the concept of "few number of students, graduate school and research oriented, and practical and international level of education", which is one of the specialities of Japanese engineering education. E-JUST has started its career as the national engineering graduate school with 8 (eight) majors. So far, E-JUST has 84 graduates from doctor and master courses as of July, 2015 since 2010. JICA has been cooperating for the operation and strengthening of E-JUST through the implementation of the technical cooperation projects named as "The Project for the establishment of Egypt-Japan University of Science and Technology" (October, 2008 to January, 2014)and "The Project for Egypt-Japan University of Science and Technology Phase2" (February, 2014 to January, 2019). E-JUST has currently proceeding the planning of the establishment of the Faculty of Engineering in September 2017. Based on the above mentioned bilateral agreement, the Government of Egypt requested the provision of the equipment to the Government of Japan as Japanese Grant Aid Project in 2014. The Government of Japan approved to commence the preparatory survey to confirm the validity of the implementation as the Grant Aid Project.

Chapter 2 Outline Design of the Requested Japanese Assistance

2-1 Design Policy

2-1-1 Basic Policy

(1) Targeted Components

The targeted component have been set based on the following basic policy.

① The provision of education and research equipment for practice for 8 departments of the Faculty of Engineering of E-JUST, which is to establish in September, 2017.

② The provision of the equipment for new campus buildings such as laboratories for the Faculty of Engineering constructed by Egyptian side is scheduled.

③ The targeted range of the planned equipment is as mentioned in "(3) Basic Policy for Equipment Planning.

(2) The Current Situation of the Project Site

1) The location of the Project site and Existing Facilities

The project site is located at Borg-El-Arab city, Alexandria, which is approximately 45 km south-west of the center of Alexandria. Alexandria is approximately 7 km apart from Mediterranean Sea. The site is almost flat and there is a road with 2 lanes and good conditions to the site from the port in Alexandria. The size of the land is approximately 1,000 m x 800 m (approximately 840,000m2). There is no construction around the site. Currently, there is one laboratory building in the south side for the new campus. There is a fence which has been under construction and surrounding the site. The area around the site is for a library, sports complex and administration offices for E-JUST in the near future.

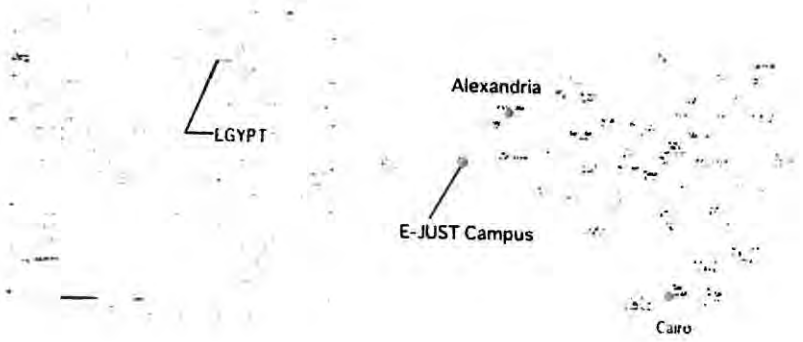


Figure 2-1 Location of the Project site

Overall construction schedule of the new campus at the site is devided into 4 phases, whch is planned by Isozaki, Aoki & Associates Co., Ltd (hereinafter referred to as "IAA"). For the 1st phase, main buildings such as the Faculty of Engineering bldgs., C.O.E (Center of Excellence) bldgs., the center for research and support, administration bldgs., dormitories and etc. shall be constructed. The equipment procured for the Project shall be installed in the 4 bldgs. of the Faculty of Engineering and a bldg. of C.O.E.

2) Existing Facilities 1 (Tentative)

The tentative existing campus buildings are located at approximately 2 km north-east from the site. 14 buildings with 5-storeies, which has been built for the dormitory of E-JUST, are currently utilized for office/laboratory/lecture (2 bldgs), for resaerch (4 bldgs), for houses for staffs and students (7 bldgs) and for services (1 bldg). The overall area is approximately 19,000 m^2. Another same sizes of 14 buildings are under construction at the opposite side of the north-block, which shall be utilized for administration and dormitory (to be completed in 2016). Besides, there is an area for solar power generation system, which will be constructed by Japanese Grant Aid.

3) Existing Facilities 2 (for Research)

There is a building for research laboratories in the site of the new campus in near south-west border. Infrastructures such as electricity, water supply and etc. are already installed at the site. The building size is approximately 109m x 19.7m and the gross floor area is approximately 2,150 m^2 with single-storey. There is a transformer substation in the west of the site. A low voltage of 380-220V, 3-phase shall be supplied to the site.

4) Other Infrastructure and Safety Faculities in the Existing Building

A gas for the research laboratories mentioned above is supplied by gas regulators.The regulators are not fixed to the wall with chains and bands. The wasted water is collected in tanks and is desposed by a company for industrial disposal waste. There is a fire alarm system and distinguishers in the building. A low voltage of 380-220V, 3-phase is supplied to the building.

(3) Basic Policy for Eqiupment Planning

1) Policy for Equipment Planning

1. The education and research equipment shall be consistent with the contents of the curriculum of the Faculty of Engineering of E-JUST to be established in September, 2017. The equipment for basic science and basic engineering which is for 1-year and 2-year of undergraduate programs shall be put the highest priority. The equipment for applied engineering and then each specialized course which is for in 3-year and 4-year shall be chosen based on the curriculum of each engineering department. The frequency of use has also been considered for selecting the equipment.

2. The curriculum for engineering education and safety equipment for building services of other major universities in Egypt and Japanese top level universities in the field of engineering shall be investigated and analyzed. The results shall be taken into account for selecting the equipment for the Project.

3. The equipment which need to be installed in the buildings constructed by E-JUST.

2) Considerations on the Layout and Allocation of the Equipment in the New Buildings

1. The large and heavy equipment shall be installed in laboratories on the ground floor. An independent concrete foundation shall be prepared when it deems necessary. A small and medium size equipment shall be put in laboratories on the first floor or above.

2. The equipment requiring a mechanical ventilation as a function of building sevice shall be identified and discussed with E-JUST/IAA when it deems necessary.

3. Regarding the demarcation between facility and equipment on gas supply, drainage and safety equipment, the conclusion of discussion with E-JUST/IAA shall be fully reflected into the design and drawings of the planned facilities.

4. Regarding the layout plan of workshops and laboratories in which the equipment with a vibration and noise and/or the equipment with delicate and precise function shall be installed, E-JUST/IAA shall be required a special consideration so as not to interfere each other. The certain adjustment shall be made when it deems necessary.

5. When the equipment requires a clean room, 24-hour air conditioning facility for controlling temperature, humidity and ventilation will be needed. In this case, it is required to consider operation and maintenance including the budget and staffs.

3) Equipment Selection Criteria

For selecting the equipemt for the Project, the following criteria shall be utilized based on the policies mentioned above.

Table 2-1 : Equipment Criteria

Criteria for Selecting the Equipment	
1	The equipment necessary for implementing the curriculum for undergraduate programs of Engineering, the contents of engineering education and research and practical methods.
2	The equipment which requires no expensive consumable and spare parts frequently.
3	The equipment which is user-friendly and maintained properly by a engineer and technician of each department with low-maintenance-cost.
4	The safety equipment which is necessary and valid to include in the Project.
Criteria for Deleting the Equipment	
1	The quipment which is confirmed of the duplication with the equipment procured by Technical Cooeration Project.
2	The equipment which has no equivalent product and no reason for designating the specific model.
3	The equipment which has low-cost-effectiveness in terms of the frequency of use and etc.
4	The equipment which can be substituted by the function of other equipment to be procured for the Project.
5	The equipment which needs a large sized facilities and/or is difficult to include for the Project in terms of the budgetary limitation.

4) Criterea for Setting the Quantity

For the equipment installed in the new buildings constructed by the Project, the quantity has been set based on the purpose of use, the number of classroom per department/academic year, the number of student per department/class and etc. For the educational equipment for practice, the quantity has been set based on the purpose of use and the number of group per department/class.

5) Equipment Grades

For the equipment for educational and research of undergraduate programs, the equipment which can be used for implementing necessary curriculum shall be planned. Also, the equipment requiring consumable regularly and/or requiring checking and calibration periodically shall be confirmed on the existence of agents in Egypt or neighboring countries and/or on the route of the provision of consumable when quotations acquired so as to utilize the equipment procured for the Project.

2-1-2 Policy for Natural Conditions

The average temperature is higher than 25℃ from July to September, but the lowest average

temperature of January and February is about 13℃. Precipitation from November to March is a lot and is especially high in December and January reaching up to about 50mm per month. Wind with sand blows from September until around May. Sand storm occurs particularly on April and May. It lasts for several hours even several days sometimes. IAA uses airtight fittings in consideration of the dust and plans to plant trees around the site boundary for preventing wind and sand.

2-1-3 Policy for Socioeconomic Conditions

The graduates of the Faculty of Engineering are expected to be an engineer with practical skills in Egypt. In other words, it is expected that the graduates can analyze the challenges in the industrial field of Egypt in the view of researcher and can present it to the company and/or factory. It is also expected that the graduates can proceed R&D with state-of-the-art equipment in the collaboration with universities using the knowledges and experiences of the equipment. For the planning of the equipment procured for the Project, the needs of human resources in the Industry of Egypt, especially relating to the promotion of the area of Alexandria which E-JUST located in shall be considered.

2-1-4 Policy on Procurement Conditions

The equipment of the Project is a practical one for undergraduate education. A certain number of the equipment is manufactured in Japan. However, for instance, practical equipment of module types for electrical and electronics fields, the third country products shall be included since there is no Japanese products for it. Also from the geographical conditions of northern Africa, the number of agents for European manufacturer is more than the those for Japanese manufacturer. Especially for the precision equipment, the necessity of the existence of a local agent is significant because of the frequency of the occurrence of trouble. For the equipment requiring the procurement of consumable ordinary, the situation is the same. Therefore, for the country of procurement, an appropriate country shall be considered item by item including the third country.

2-1-5 Policy on Use of Local Contractors

There are engineers with the skills of installation work and training for simple equipment in agents in Egypt, however, there are few engineers with the skills of installation and training for precision equipment and the equipment required a sophisticated skills. Therefore, it is assumed that the manufacturer's engineers from their home country or neighboring countries of Egypt shall be dispatched for installation work and training of equipment that requires a particular advanced technology level.

2-1-6 Policy on Operation and Maintenance

For operation and maintenance of the equipment, Technology Management Department and all

related Departments of E-JUST shall mainly carry out the work. Currently, TCP has been supporting the organization of the operation and maintenance system as one of the activities of the Project. For operation and maintenance of the equipment procured for the Project, the engineers and technicians of Technology Management Department and all related Departments of E-JUST shall operate the work. When the equipment is delivered to the site, the instruction for operation and maintenance shall be done for all the equipment. Especially for the precise equipment and the equipment requiring skilled operation and maintenance, Operation Training shall be planned adding to the normal ones so as to promote the secure and effective use of the equipment.

2-1-7 Policy on Grade Setting for the Equipment

For the grade of the equipment, it shall be consistent with the contents of the curriculum for undergraduate program for E-JUST. For the selection of the equipment, an appropriate grade of the equipment to be used effectively shall be chosen. The policy of E-JUST is to adopt Japanese-style engineering education and to achive differentiation from other universities in Egypt by introducing distinctive laboratories and major fields. E-JUST also put the emphasis on the development of human resources for the industrial field in the area of Alexandria. Thus, a necessary grade of the equipment being consistent with the contents of the curriculum shall be secured.

2-1-8 Policy on Procurement Method and Schedule

As mentioned in 2-1-4, regarding the setting of the country of procurement of the equipment for the Project, Japan and the third country procurement shall be set per equipment. For the implementation schedule of the Project, since 8 undergraduate programs of the Faculty of Engineering shall be established in September, 2017. With regard to procurement planning and schedule of the equipment, the delivery of all the equipment shall be done by July, 2017. Also, the tendering shall be devided into 4 lots in terms of securing competitiveness. Considering the allocation of laboratories in buildings, the field of the equipment (by Department/Laboratory) and the time of delivery of the equipment, the delivery and installation work shall be planned efficiently.

2-2 Basic Plan

(1) Equipment Planning

During the discussions with E-JUST in Egypt, the following items have been confirmed.

Table 2-2 : The Contents of the Confirmation

Item	Contents of the Confirmation
Relating to the Undergraduate Programs	Corresponding curriculum for the Faculty of Engineering, Academic Year for each equipment, etc.
Purpose of Use	Course No. of the Undergraduate Program, Corresponding subjects, How to use in practice(for demonstration, for group work, etc.)
Criteria for Q'ty setting	Number of student, Number of group, etc.
Location to be installed	Name of Laboratories in new campus, Layout Plan inside the laboratories
Utilities	Power Supply (Single-phase・Three-phase), Water Supply and Drainage, Gas Supply, etc.
Engineer for Operation and Maintenance	Number of Engineer, Number of Technician
Budget for Operation and Maintenance	Confirmation of a budgetary planning at E-JUST

The outline of the equipment planned is as follows. The whole equipment list of the Project is attached to the Minutes of Discussions of the Explanation on Draft Preparatory Survey Report as Annex 13.

Table 2-3 : Outline of the Equipment Planned

Classification	Installation site(laboratory name)	Main Equipment	Requirements for facilities
Basic Science	Basic Science laboratory-1	Electro analytical scale, pH Meter, Absorption Spectrophotometer, Centrifuge and etc.	Water supply and Drainage Fume hood
	Basic Science laboratory-2	Line Spectrum Light Source, Thermo Electromotive Force Measuring Apparatus, Absorption of Beta-Ray, Electron Specific Charge Measurement System and etc.	Water Supply and Drainage Fume Hood
	Computer Programming laboratory	High Definition Projector, Interactive Board System and etc.	Power source for PC LAN cable laying Air conditioning
	Materials Science laboratory	Tensile Testing Machine, Impact Testing Machine and etc.	No other comments
Basic Engineering	Basic Engineering laboratory-1	Desktop PC, Electrical Circuits Lit, PCB CNC Machines and etc.	Air conditioning Ventilation system Multi electrical outlet
	Basic Engineering laboratory-2	Thermal Conductivity of Building Materials, UV/vis Spectrophotometer, Convection and Radiation, Autoclave and etc.	Ventilation system Water faucet
	Electronics and Circuits laboratory	Electronics Circuits Kit, PCB CNC Machines and etc.	Dust collector for PCB CNC Machine
	Mechanical Workshop-1	Universal Grinding Machine, Hydraulic Press, Universal Milling Machine, Forging Press, Sand Casting Kit, Lathe, Bench Mounted Column Drill, Spot Welding Unit with Arm Set, Universal Bender, Hydraulic Surface Grinder and etc.	Gas detector, Duct for high temp.air, Anti-Vibration equipment, Large capacity power source for welders Water supply and drainage Stiff concrete floor and Special concrete foundation for forging machine Compressed air supply Treatment for fire and noise / vibration
	Mechanical Workshop-2	Laser Cutting System, Surface Metrology and Form Measurement System, Basic CNC Training Center, Hydraulic Surface Grinder, Multipurpose Milling Machine, Precision Lathe, CNC Electric Wire Discharge Machine and etc.	Ventilation system Water supply and drainage Air conditioning Stiff concrete floor Compressed air supply Duct for high temp.air, Treatment for fire and noise / vibration
	Drawing Studios laboratory	High Definition Projector, A0 Plotter, 3D Printer and etc.	Air conditioning Suspension device for projector and screen
Applied	Mechanical	Universal Vibration	No other comments

Engineering	vibrations laboratory	Apparatus, Vibration Sensor with Clamping Set, Whirling of Shafts Apparatus, Impact Test Hammer and etc.	
	Automatic Control laboratory	Analog and Digital DC Servo System, Digital Pendulum, Level/Flow Process Control, Temperature Process Control, Pressure Process Control and etc.	No other comments
	Microprocessor / Digital Systems laboratory	Microprocessors and Microcontroller kit, Logic Analyzer and etc.	No other comments
	Monotsukuri Center	Inverted phase-contrast microscope, Stereo Microscope, Scanning Electron Microscope, Stereo Microscope and etc.	Anti-vibration and Noise free environment for desktop SEM Air conditioning Water faucet
Electronics and Communications Engineering (ECE)			
Track Laboratories	ECE Project Based Learning laboratory / Data Communication Engineering laboratory	Computer Interface Base Unit, Spectrum Analyzer and etc.	Power source for PC LAN cable laying Air conditioning Suspension device for projector and screen
	Advanced Electronics laboratory	Electronics Demonstration System, Function Generator and etc.	Air conditioning
	Optical Communication laboratory	Fiber Optics Educational Kit, Single Mode Fiber Optics and etc.	Air conditioning
	Solid State laboratory	Electronics Demonstration System	Air conditioning
	Radio Frequency Circuits laboratory	Flexible Cables for Vector Network Analyzer, Flexible Cable Set for Signal Aanalyzer	Air conditioning
	Electronics laboratory	Basic Electronics laboratory	Air conditioning
	Microwaves & Antenna laboratory	Antenna Training and Measuring System, Vector Network Analyzer and etc.	Air conditioning
Computer Science and Engineering (CSE)			
Track Laboratories	Computing Workshop	Sensors, Laptop PC, 3D Printer and etc.	Power source for PC LAN cable laying Air conditioning Ventilation system
	Cloud Computing laboratory	Blade Units	Power source for PC LAN cable laying Air conditioning
Electrical Power Engineering (EPE)			

Track Laboratories	EPE Project Based Learning laboratory	Basics Interface Unit, Photovoltaics Unit and etc.	Air conditioning
	Power Electronics laboratory	Self-commutated converter circuits, Field-oriented control of asynchronous machine and etc.	No other comments
	Electical Machines laboratory	DC Machines , Three-Phase Motor with Slip-Rings and etc.	No other comments
	Switch Gear and Protection laboratory	Investigations on Three-Phase Transmission Lines, Directional Overcurrent Time Protection for Lines, Motor Management Relays and etc.	No other comments
	Power System laboratory	Manually operated synchronising circuits, Investigations on Three-phase Transmission Lines and etc.	No other comments
Industrial and Manufacturing Engineering (IME)			
Track Laboratories	IME Applications laboratory	Desktop PC, Applications server A0 Plotter, High Resolution Projector and etc.	Power source for PC LAN cable laying Air conditioning
	CAD Reverse Engineering laboratory	Desktop PC, 3D Printer,A0 Plotter, High Resolution Projector, Portable Articulated Arm CMM, CO2 laser cutting systems and etc.	Power source for PC LAN cable laying Air conditioning Suspension device for projector and screen
	Manufacturing laboratory	Master CNC Training Center including CNC Lathe and Vertical Machining Center	Ventilation system Safety device (fence etc) Water supply and drainage Air conditioning Stiff concrete foundation
	Ergonomics laboratory	Biomedical Measuring System, ErgoKit High Pull Force Equipment, Eye Movement Recorder and etc.	Water faucet Air conditioning
	Computer Integrated Manufacturing laboratory	Flexible Manufacturing System, RFID Training Kit and etc.	Air conditioning
	Precision Engineering	Tool Makers Microscope, Profile Projector and etc.	24 hours constant temp & humidity air conditioning Anti-vibration (as precision measuring room)
Mechatronics Engineering (MTE)			
Track Laboratories	Mechatronics and Robotics laboratory	Robot Arm, Universal Mechanism Kit, Pneumatics and Electro-Pneumatics System, Production Line with 3/4 Subsystems, Handling Station, Storage Station, Routing Station, Disassembly Station and	No other comments

		etc.	
Materials Science and Engineering (MSE)			
Track Laboratories	Materials Testing and characterization laboratory	Friction and Wear Testing Machine, Ultrasonic Flaw Detector, Benchtop XRD, Upright Microscope and etc.	Water faucet
	Materials Processing laboratory	Ball Milling, Induction Furnace, Rolling Machine, Twin Screw Extruder, Single Screw Extruder and etc.	Ventilation system Water faucet
Energy Resources Engineering (ERE)			
Track Laboratories	ERE Project Based Learning laboratory	Wet Cooling Tower, Cooling Columns and etc.	Water supply and drainage
	Renewable Energy laboratory	Basics Renewable Energy Trainer, Small Wind Power Plant, Wind Power Plant System, Advanced Fuel Cell Technology Training System and etc.	No other comments
	Fuel laboratory	Modular Test Stand for Single Cylinder Engines, Exhaust Gas Analysing Unit and etc.	Gas detector Exhaust gas duct Ventilation system Water supply and drainage Sound proof treatment
	Thermo-fluids laboratory	Air Conditioning Controller, Capacity Control and Faults in Refrigeration Systems, Heat exchanger supply unit, Base Module for Experiments in Fluid Mechanics and etc.	Water supply and drainage
	Alternative Energylaboratory	Fuel Cell System, Fuel Cell Trainer, Solar Module Measurements and etc.	Ventilation system
Chemical and Petrochemicals Engineering (CPE)			
Track Laboratories	CPE Project Based Learning laboratory	UV/vis Spectrophotometer, Atomic Absorption, Mufful Furnace, Analytical Balance and etc.	Gas detector Exhaust gas duct for Atomic Absorption Ventilation system Water faucet
	Physical Chemistry and Reaction Kinetics and Catalysis laboratory	Chemical Reactors Apparatus, Three-Phase Catalytic Reactor and etc.	Gas detector Exhaust gas duct for Atomic Absorption Ventilation system Water faucet
	Chemical Process Technology laboratory	Solid-Liquid Extraction Unit, Coagulation, Flocculation and Settling Point Plant, Atomic Absorption and etc.	Gas detector Exhaust gas duct for Atomic Absorption Ventilation system Water faucet
	Corrosion & Electrochemistry laboratory	Potentiostat Unit, Fuel Cell Trainer, Electrochemical Experiments system and etc.	Water faucet
	Chemical	Level Control Process, Flow Control Process,	Water faucet

	Engineering Process Control laboratory	Pressure Control Process, Temperature Control Process, Multifunction Process Control Teaching System and etc.	
	Petrochemical laboratory	Gay-lussac's Law Trainer, Pour Point Koehler Cloud and Pour Point Bath, Sulphure Content and etc.	Water faucet
	Unit Operation laboratory	Batch Distillation column, Liq/liq Extraction Unit with Packed Column, Gas Absorption Column, Crystallization Unit, Heat Transfer Pilot Plant with Shell-and-Tube and Coil Heal and etc.	Gas detector Exhaust gas duct for Atomic Absorption Ventilation system Water faucet

2-3 Outline Design Drawing

Since the component of the Project is only of the equipment, no drawing required.

2-4 Implementation Plan

2-4-1 Implementation Policy

This Project is to be implemented in accordance with Japan's Grant Aid Scheme. After the Project is approved by the Japanese Cabinet, the Governments of Japan and Egypt will sign on Exchange of Notes (E/N). Then, Grant Agreement (G/A) between JICA and the designated Ministry of the Government of Egypt will be signed. Subsequently, E-JUST will conclude a consulting services agreement for the Project with a Japanese consulting firm. Upon the completion of the detailed design, the Tender for selecting Japanese supplier(s) will be implemented and the awarded supplier(s) will enter into the contract(s) with E-JUST. After that the supplier(s) will start procurement procedures and implement the installation work for the Project. The followings shall be considered through the implementation of the Project.

(1) Project Implementation Structure

The executing agency of the Government of Egypt for the Project is E-JUST, and E-JUST will be a signatory of relevant agreements and contracts. The appointed staff members of E-JUST will act as coordinators to manage operations during the implementation of the Project.

(2) Consultant

After the signing of E/N and G/A mentioned above, E-JUST will conclude a consulting services agreement for the detailed design and supervision of the Project with a Japanese consulting firm and obtain verification from JICA in accordance with the Grant Aid Scheme. The consultant will implement the following works based on the contract.

① Detailed Design:

The consultant is to develop a detailed design, review the equipment plan, and prepare tender documents consisting of specifications, other relevant technical documents relating to the equipment. The consultant is also to estimate the costs of the equipment works.

② Tender Assistance

The consultant is to assist the executing agency (E-JUST) of Egypt in tendering to select supplier(s), and in preparing necessary documents for the contract(s). The consultant is also to assist reporting the results of the tender to the Government of Japan.

③ Procurement Supervision:

The responsibilities of the consultant is to confirm whether the supplier(s) are

performing their respective works as specified in their contract(s).

The major tasks of the consultant is described below:

- Examine and confirm the equipment specifications and other relevant documents submitted by the supplier;
- Conduct pre-shipment inspection to examine and confirm the quality and performance of the equipment delivered;
- Ensure the delivery, installation, instruction for operation and maintenance and operation training of the equipment for the Project;
- To monitor and to report the progress of the equipment works;
- Witness the commissioning of the completed the procurement of the equipment.

In addition, the Consulant is to report the progress of the Project, procedure of payment, circumstances of handover after completion, etc to the relevant agencies such as JICA.

(3) Equipment Supplier

A Supplier(s) are to be selected by open tender in which Japanese corporations are eligible to participate. In accordance with their respective contract, the supplier(s) are to procure, deliver and install the equipment as well as provide the Egypt side with operation and maintenance training for the equipment. Additionally, the supplier(s) are to prepare for logistic support together with the relevant manufacturers and local agencies so that the Project's target organization can purchase spare parts and consumable supplies and receive paid technical training after the equipment is handed-over to them.

(4) JICA

As the implementing agency of the Government of Japan for the Grant Aid, JICA provides necessary services for executing the Project in accordance with the Japan's Grant Aid Scheme.

(5) Procurement Planning

Regarding an actual procurement plan, it shall be adjusted between E-JUST and the Consultant during the period of the detailed design. The timing of the commencement and its methods of the obligations for Japan and Egypt shall be confirmed and clarified respectively for smooth implementation of the schedule based on the report. Especially, the commencement of the construction work of new campus implemented by Egypt side shall be duly completed before

the announcement of the tender for the equipment procurement.

2-4-2 Implementation Conditions

(1) Implementation Conditions

The equipment to be procured for the Project shall be installed in the laboratories of new 5 (five) buildings which shall be constructed by E-JUST for the Faculty of Engineering starting from on September, 2017. Thus, the procurement schedule of the equipment shall be set according to the schedule of construction of the said new buildings. Prior to the shipment, the overall schedule such as the progress of the construction schedule, the status of the preparation of the laboratories inside and etc. shall be fully confirmed as it is ready or not. Since some of the equipment shall be adjusted for the preparation of utilities in terms of installation, the Supplier, the Contractor and the Consultant shall make a close contact each other to realize an appropriate management on the procurement schedule according to the progress of the construction.

(2) Tax Exemption Procedures

For getting a tax exemption of the imported equipment in Egypt, the permission of the tax exemption shall be necessary. E-JUST, which is the consignee of the Project, shall submit the following documents to the customs.

- A letter for the tax exemption addressed to the Director of Central Customs
- A letter for the special case of the tax exemption addressed to theDepartment of Central Management of the Customs
- A request form of receiving the documents relating to the shipment addressed to the Fowarder

Besides the documents above, shipping documents such as invoices, packing lists and etc. prepared by the Supplier shall be necessary to submit. Then, E-JUST shall pay regular charges to the Customs and have the equipment checked. The Customs judges if the equipment falls under the approval of NTRA (National Telecommunication Regulatory Authority). If not, the tax exemption shall be approved within 3 (three) days in general. The total duration of getting the approval shall be counted for 7 (seven) to 10 (ten) days.

2-4-3 Scope of Works

The items agreed between both countries on the scope of works for the Project is as follows.

Table2-4 Major Undertakings to be taken by Recipient Government

1. Before the Tender

NO	Items	Deadline	In charge	Cost	Ref.
1	To open Bank Account (Banking Arrangement (B/A))	May 2016 (within one month after G/A)	MoIC	-	

2	To secure the project sites (840,000m^2)	July 2015	E-JUST	-	
3	To obtain the planning, zoning, building permit	before notice of the tender document	E-JUST	-	
4	To clear, level and reclaim the project sites (840,000m^2)	before notice of the tender document	E-JUST	-	
5	To submit the application of the Undergraduate Program of Faculty of Engineering to Supreme Council of University (SCU) engineering sector	January 2016	E-JUST		
6	To obtain the primary approval of the Undergraduate Program by SCU engineering sector	April 2016	E-JUST		
7	To approve the Detail Design (DD) submitted by the Consultant	August 2016 (the end of DD)	E-JUST	-	

2. During the Project Implementation

NO	Items	Deadline	In charge	Cost	Ref.
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A				
	1) Advising commission of A/P	June 2016(within 1 month after the singing of the contract)	MoIC	5,000 JPY	
	2) Payment commission for A/P	every payment	MoIC	2.million JPY	
2	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country				
	Tax exemption and customs clearance of the products at the port of disembarkation	during the Project	E-JUST	-	
3	To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work	during the Project	E-JUST	-	
4	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the Products and/or the Services be exempted by its designated authority without using the Grant. Such customs duties, internal taxes and other fiscal levies mentioned above include sales tax and services tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract	during the Project	E-JUST, MoIC, MoF	-	
5	To bear all the expenses including construction of the facilities, other than those to be borne by the Grant Aid,	during the Project	E-JUST	-	
6	To submit Project Monitoring Report supported by Consultant	during the Project	E-JUST	-	MD
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities				
	1) Electricity				
	The distributing line to the site	before start of the installation of the equipment (June 2017)	E-JUST	-	
	2) Water Supply				

	The city water distribution main to the site	before start of the installation of the equipment (June 2017)	E-JUST	-	
	3) Drainage				
	The city drainage main (for storm, sewer and others) to the site	before start of the installation of the equipment (June 2017)	E-JUST	-	
	4) Furniture and Equipment				
	General and special furniture	before start of the installation of the equipment (June 2017)	E-JUST	-	
8	To complete basic infrastructure of E-JUST new campus	November 2016	E-JUST	150 mil. EGP	
9	To complete the buildings of E-JUST new campus (Phase-I)	June 2017	E-JUST	850 mil. EGP	
10	To complete the utilities required for equipment installation such as power source, water supply and drainage, plumbing and exhaust duct and reinforced foundation.	June 2017	E-JUST	Included in 9	Annex 14

3. After the Project

NO	Items	Deadline	In charge	Cost	Ref.
1	To maintain and use properly and effectively the equipment provided under the Grant Aid	After completion of the construction	E-JUST		
	1) Allocation of budget for basic consumables for operations(every year)	After completion of the handing over the equipment	E-JUST	1.67 million JPY	
	2) Allocation of maintenance budget (maintenance contract provided by the supplier including spare parts)	After completion of the warranty periods	E-JUST	(*)	
	3) Operation and maintenance organizational structure	After completion of the handing over the equipment	E-JUST		
	4) Routine check/Periodic inspection	After completion of the handing over the equipment	E-JUST		

(*)To be estimated during the tender and procurement phase

Table 2-5 Major Undertakings to be Covered by the Japanese Grant

This Part is closed due to the confidentiality.

2-4-4 Consultant Supervision

(1) Procurement Supervision Policy

Based on the policy of Japanese Grant Aid Scheme, the Consultant shall implement the works smoothly by organizing a project team with a consistency through the Project. The policy for procurement supervision as follows.

- Having a close contact with a person in charge of relevant organizations of both countries, the procurement of the equipment shall be completed without any delay.
- The Consultant shall make an appropriate assistance and advice to the supplier and relevant personnel with fairness and speediness.
- The Consultant shall make an appropriate assistance and advice on operation and maintenance after handing over the equipment. After the confirmation of installation work and the other obligations in the contract, the Project shall be completed having the certificate of completion of the services from E-JUST.

3-19

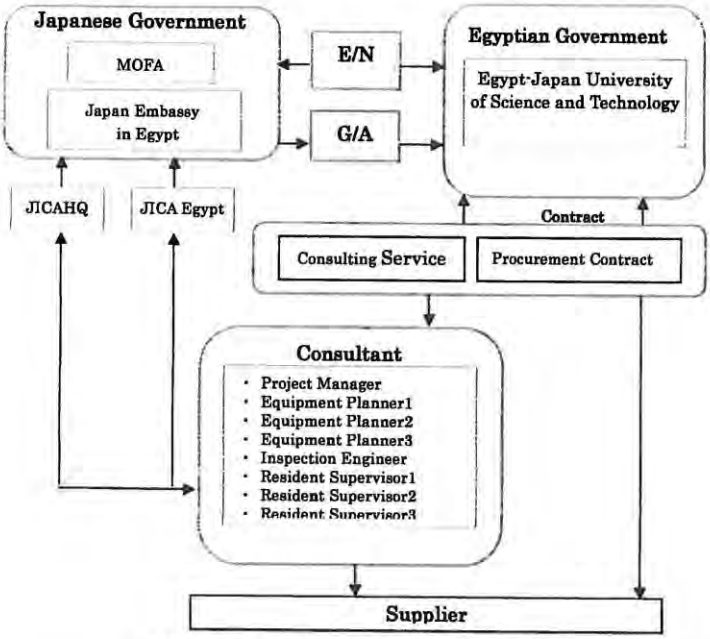


Figure 2-1 Implementing Organization for the Project

(2) Procurement Supervision Plan

1) Kick-off meeting/Confirmation of the equipment specifications in Japan

It is assumed that the schedule of equipment procurement such as ordering, inspection, shipment, transportation and installation, the organogram of the Supplier for the Project such as staffs, reporting procedures and etc.,required documents in tender documents such as equipemt specifications, utility list and etc.and so on shall be confirmed.

2) Shop Inspection in Japan

A part of the practical equipment shall be delivered to the designated warehouse in an assembled package for exporting at a manufacturer's factory. Therefore, a shop inspection shall be conducted before the delivery of the equipment at a manufacturer's factory. Inspection Engineer shall be in charge of the work.

3) Pre-shipment Inspection in Japan

The selection of an organization for inspection for pre-shipment inspection by a third-party organization, the preparation of necessary documents such as equipment specification for the pre-shipment inspection, the confirmation of the contents of the inspection report and the submission of the report of the completion of the pre-shipment inspection to E-JUST shall be conducted. Inspection Engineer shall be in charge of the work.

4) Supervision for Equipment Procurement at the Site

The supervising work such as for inspection, installation, adjustment, initial instruction for operation and maintenance and operation training implemented by the Supplier shall be conducted with the personnel of E-JUST at the site. The Consultant shall check the equipment procured if it is in accordance with the contract such as the name of manufacturer, model number, specifications and so on. For initial instruction for operation and maintenance and operation training, the check sheet including the signature of the completion of them shall be collected together with the name, title and section belonging to of persons who participated in it. A resident engineer for the supervision of equipment procurement shall conduct the work through the entire period of the whole works implemented by the Supplier at the site.

5) Final Inspection and Handing- over at the Site

Upon having the completion of the works above, the Consultant shall report to a responsible person of E-JUST on the completion of handing-over and proceed the necessary steps. A resident supervisor for the supervision of equipment procurement shall conduct the work.

6) Inspection for Defects before the Expire of Warranty at the site

The Consultant shall conduct the inspection for defects before the expire of warranty at the site and file a report for the inspection. Inspection engineer shall conduct the work.

(3) Management for Equipment Procurement of the Supplier

1) Confirmation of Equipment Specifications

The schedule of equipment procurement such as ordering, inspection, shipment, transportation and installation, the organogram of the Supplier for the Project such as staffs, reporting procedures and etc.,required documents in Tender Documents such as equipemt specifications, utility list and etc.and so on shall be explained by the Supplier and the Consultant shall be approved it. Inspection engineer of the Supplier shall conduct the work.

2) Shop Inspection in Japan

A part of the practical equipment shall be delivered to the designated warehouse in an assembled package for exporting at a manufacturer's factory. Therefore, a shop inspection shall be conducted before the delivery of the equipment at a manufacturer's factory.

3) Pre-shipment Inspection in Japan

The prepration of the inspection with manufacturers and the assistance of the inspection with an organization for pre-shipment inspection by a third-party organization shall be conducted by the Supplier. Inspection Engineer shall be in charge of the work. The copies of the documents necessary for the shipment such as the bill of lading, insurance policy, invoice, packing list and so on shall be submitted to the organization for the inspection after the shipment.

4) Management for Equipment Procurement at the Site

The inspection, installation, adjustment, initial instruction for operation and maintenance and operation training for all the equipment procured for the Project shall be implemented by the upplier with the presence of E-JUST at the site under the supervision by the Consultant. A resident engineer for the management of equipment procurement shall be conducted the work.

2-4-5 Quality Control Plan

The Consultant shall supervise the procurement procedures with the predetermined reference based on the approved documents for procurement. The predetermined reference shall be conformed to Japanese standards.

2-4-6 Procurement Plan

The equipment for the Project shall be shipped from the port of embarkation in Japan and/or the third countries to the port in Alexandria. After the unloading at the port, the equipment shall be transported to the site by truck. The distance from the port in Alexandria to Borg-El-Arab is approximately.45 km and the conditions of the road is generally fine. For setting the duration of the transportation, the results of the preparatory survey and the estimates from forwarders shall be the basis.

2-4-7 Operational Guidance Plan

Having the equipment delivered, installed and commissioned, the initial instruction for operation and maintenance and operation training shall be carried out. Since the instruction on how to operate and maintain the equipment shall be definitely needed for the large equipment installed in workshops and the analytical equipment installed in laboratories and safety equipment, the engineers shall be dispatched from Japan and/or the third countries for implementing the initial instruction for operation and maintenance and/or operation training. Regarding the equipment not necessary for the installation, the initial instruction for operation and maintenance shall be done by the engineers dispatched by the supplier. The Consultant shall confirm if the instruction and/or operation training are implemented properly. When the equipment is handed over to E-JUST, a person in chrge of each department, the consultant and the supplier shall confirm on the contents of the instruction and/or operation training and the level of understandings.

2-4-8 Soft Component Plan

For the Technology Management Department and all related Departments of E-JUST being responsible for operation and maintenance for the equipment, the TCP named E-JUST Project Phase 2 by JICA has been supporting the operation and maintenance in E-JUST. As mentioned in 2-4-7, for the large equipment requiring the installation, the analytical equipment installing in chemical laboratories and safety equipment, operation training shall be implemented by the engineers of manufacturers. Thus, soft component shall not be required for the Project.

2-4-9 Implementation Schedule

The implementation schedule until the commencement of procurement, is as follows.

- The E/N is signed between the Government of Egypt and the Government of Japan, and the G/A is signed between the Government of Egypt and JICA.
- A Japanese consultant is recommended by JICA.
- The agreement of consulting services for the Project is concluded between E-JUST and the recommended consultant.
- The procurement work is to be commenced after detailed design, assistance of tender in Japan, and conclusion of the contract for procurement works.

(1) Detailed Design

The Consultant prepares the detailed design document and the tender document, based on the report. It consists of specifications and relevant tender document and etc. The Consultant has close talks and meetings with E-JUST at the beginning and at the end of the detailed design phase. The detailed design phase will be completed after submission of the final deliverables, with confirmation of E-JUST.

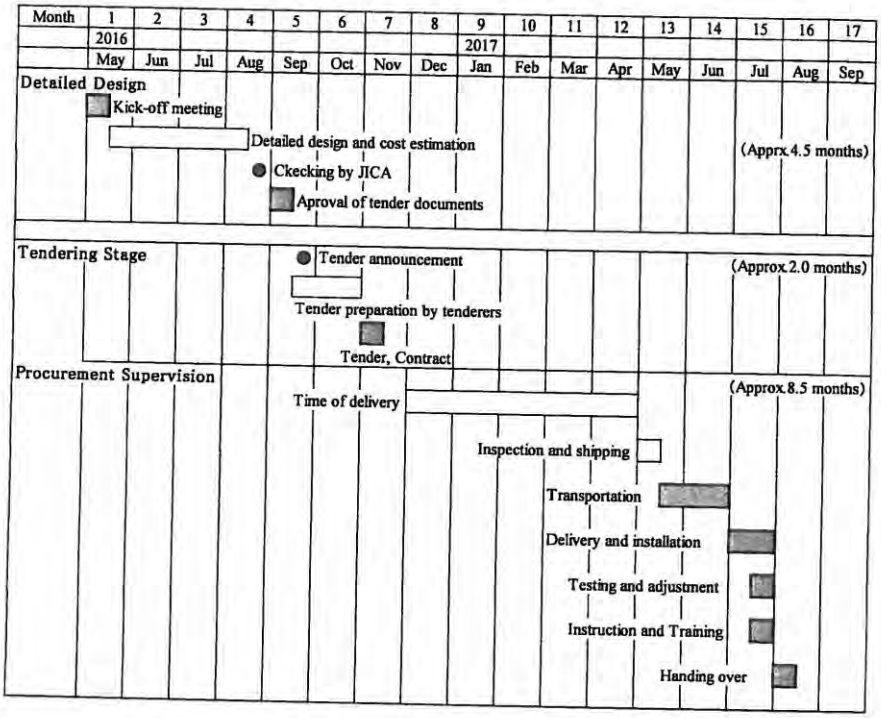
(2) Tender

After detailed design, the tender for procurement will be announced in Japan. E-JUST will invite Japanese equipment suppliers who declare the intent to participate. Then E-JUST will conduct the tenders respectively with the assistance of the consultant under the presence of persons involved, and the tenderers who bid the lowest price within the ceiling price will make contract with E-JUST.

(3) Equipment procurement

The equipment works will be commenced, after the contract is verified by JICA.
Considering the scale of the Project and the local conditions, the total period of equipment procurement as well as installation and operation training will approximatelyy be 8.5 months.
On the premise that the smooth procurement of materials and equipment, prompt execution of relevant procedures and implementation of works to be borne by the Egyptian side, are carried out.

Annex 3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2016
2017
May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Detailed Design
Kick-off meeting
Detailed design and cost estimation
Ckecking by JICA
Aproval of tender documents
(Apprx.4.5 months)
Tendering Stage
Tender announcement
Tender preparation by tenderers
Tender, Contract
(Approx.2.0 months)
Procurement Supervision
Time of delivery
Inspection and shipping
Transportation
Delivery and installation
Testing and adjustment
Instruction and Training
Handing over
(Approx.8.5 months)

Chapter 3 Obligations of Recipient Country

This Project will be implemented under the Grant Aid Scheme of the Government of Japan, and the Government of Egypt shall be responsible for the following tasks.

(1) Before the Tender

- To open Bank Account (Banking Arrangement (B/A))
- To secure the project site (840,000m2) (completed) and obtain the planning, zoning and building permit, clear the level and reclaim the project site
- To submit the application of the Undergraduate Program of the Faculty of Engineering to Supreme Council of University (SCU) engineering sector
- To obtain the primary approval of the Undergraduate Program by SCU engineering sector
- To approve the Detail Design (DD) submitted by the Consultant

(2) During the Project Implementation

- To bear the following commissions to a bank of Japan for the banking services based upon the B/A such as Advising commission of A/P and Payment commission of A/P
- To ensure unloading and customs clearance at the port of disembarkation in recipient country
  - Tax exemption and customs clearance of the products at the port of disembarkation
- To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work
- To ensure that customs duties be exempted under the responsibility of the Egyptian side and internal taxes and other fiscal levies which may be imposed in Egypt with respect to the purchase of the Products and/or the Services be borne by its designated authority without using the Grant
- To bear all the expenses including construction of the facilities, other than those to be borne by the Grant
- To submit Project Monitoring Report supported by Consultant
- To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities
  - Electricity: distributing line to the site, Water Supply: the city water distribution main to the site, Drainage: the city drainage main to the site, Procurement of General Furniture
- To complete basic infrastructure of E-JUST new campus
- To complete the buildings of E-JUST new campus (Phase-I)
- To complete the utilities required for equipment installation

(3) After the Project

- To maintain and use properly and effectively equipment provided under the Grant Aid
  - Allocation of budget for basic consumable for operations (every year) and maintenance budget (maintenance contract provided by the supplier including spare parts, Operation and maintenance organizational structure, Routine check/Periodic inspection

Chapter 4 Project Operation Plan

4-1 Organization for Operation and Maintenance

(1) Number of Staffs

According to the planning of E-JUST, the number of staffs of E-JUST will be increased from approximately 100 staffs to approximately 164 staffs including approximately 50 of teaching staffs and 114 of the other staffs after the establishment of undergraduate programs of the faculty of Engineering in 2017.

(2) Operation System

Regarding the operation and maintenance of the equipment, Technology Management Department and all relevant Departments of E-JUST shall be in charge of it. 2 (two) of engineers and/or technicians shall be allocated to each Department in the future plan. Having the support of the TCP, the organization and recruit of new staffs shall be proceeded. A maintenance contract for a large equipment with local agents shall be considered after the procurement of the equipment.

4-2 Maintenance System

For the operation and maintenance of the equipment procured for the Project, the engineers and/or technicians of Technology Management Department of E-JUST shall be in charge mainly. When the delivery of the equipment, initial instruction for operation and maintenance shall be implemented for all the equipment. Especially, for the precise equipment and the equipment requiring the skilled operation and maintenance, operation training shall be implemented adding to the said general one. Having those components, the equipment for the Project shall be utilized effectively and properly.

The followings are the recommended structure for operation and maintenance for the Headquarters of E-JUST, the Faculty of Engineeiring and the relevant Departments. Although, some of the system have already been structured.

Table 4-1 : The proposal of a systematic structure for operation and maintenance at E-JUST

The role of HQ of E-JUST	The role of the Faculty of Engineering	The role of each department
• Drafting of the policy for the implementation of operation and maintenance	• The application of the budget for operation and maintenance to the headquarters of E-JUST based on the requirement of each department	• The role and responsibilities for the head of department, a person in charge for operation and maintenance and lecturers shall be defined
• Securing and allocation of the budget	• The application for the allocation of human resources	• The management of inventory list of the equipment by each department
• Drafting of the allocation of human resources	• The management of inventory list of the equipment	• The dissemination and instruction for students on how to use of the equipment
• Drafting of the planning for education of human resources	• The collection of information from each department	• The daily checking for the shortage of spare parts and consumable of the equipment
	• The sharing of information with the headquarters of E-JUST through a periodical meeting	• The reporting and application for repair to the Faculty on a serious damage of the equipment
	• The implementation of seminars for	• The role and responsibilities of

The role of HQ of E-JUST	The role of the Faculty of Engineering	The role of each department
	the improvement of the technique for operation and maintenance targeting to lecturers engineers and technicians • Correspondence for the requirement of the repair of the equipment including the ordering to manufacturer's agent.	engineers and technicians for daily maintenance including the repair on simple trouble of the equipment shall be defined • The implementation of daily maintenance including monitoring and record using a check list shall be done properly • The shortage of spare parts and consumable shall be checked • Adjustment and repairing of simple trouble of the equipment shall be done by a engineer and/or technician • The judgement of the cause of serious damages shall be done by a engineer and/or technician

Chapter 5 Project Cost Estimation

5-1 Initial Cost Estimation

This Part is closed due to the confidentiality.

(3) Expenses to be borne by the Egyptian Side

: Approximately 130 thousand EGP (Approximately 2million JPY)

Table 5-1Expenses to be borne by the Egyptian Side

No.	Item	Contents	Estimated Cost (EGP)	In charge
1	Banking charges	Advising commission and Payment commission of A/P	130,208.00	E-JUST
Total			130,208.00	

(4) Conditions for Estimate of Accumulation

①Estimated as of : November, 2015
②Exchange rate : 1 USD=122.20 JPY
③Procurement Schedule : The duration of detailed design and the procurement is as shownin the figure of Procurement Schedule
④Others : Cost estimation shall be calculated based on the system of Japanese Grant Aid

5-2 Operation and Maintenance Cost

(1) Operation and Maintenance Cost of Equipment

The equipment requiring consumable for its daily operation for the Project is shown in Table 5-2. The cost needed for each year is calculated based on the actual needs of the equipment plan according to the curriculum.The annual cost shown in the Table below is the average amount of 7 years considering the life-time of the equipment.

Table 5-2 Equipment requiring consumable for its daily operation (Unit : EGP)

Description	Name of Consumable	Unit Price	Q'ty annually needed	Amount
Water Purifying System	Filter	300	1	300
Trinocular Microscope	Halogen Lamp	250	10	2,500
Universal Milling Machine	Face Milling Cutter	1,500	6	9,000
Machines Lathe with Milling Unit	Face Milling Cutter	1,500	6	9,000
	Turning Tool	1,500	6	9,000
Portable MIG/TIG Welder	Torch Nozzle	60	6	360
Sanding and Polishing Machine	Polishing Cloth	200	2	400
	Polishing Paper	50	20	1,000
Basic CNC Training Center	Face Milling Cutter	3,500	1	3,500
	Turning Tool	1,500	1	1,500
Multipurpose Milling Machine	Face Milling Cutter	3,500	2	7,000
Precision Lathe	Turning Tool	1,500	2	1,500
CNC Electric Wire Discharge Machine	Processing Wire	2,000	1	2,000
Electric Wire Discharge Machine	Processing Wire	2,000	1	2,000
Semi-Automatic Miter Band Saw	Blade	1,500	1	1,500
Radial Drill Press	Drill Bit	3,500	1	3,500
CNC Universal Turning Machine	Turning Tool	1,500	1	1,500
Inverted Phase-Contrast Microscope	Halogen Lamp	250	1	250
Stereo Microscope	Halogen Lamp	250	1	250
System Microscope	Halogen Lamp	250	1	250
Scanning Electron Microscope	Filament	3,000	1	3,000
Rockwell Hardness Tester	Hardness Standard Block	1,000	2	2,000
Vickers Hardness Tester	Hardness Standard Block	2,500	2	5,000
Benchtop XRD	Sample holder	20	100	2,000
Upright Microscope	Halogen Lamp	250	2	500
Stereoscope	Halogen Lamp	250	2	500
Mechanical Polishing Machine	Polishing Cloth	200	3	600
	Polishing Paper	50	30	1,500
Cutting Machine	Blade	1,500	2	3,000

Titrations Experiment (5models)	Regents	700	10	7,000
Electrochemical Process Experimentals	Reagents	700	10	7,000
UV/vis Spectrophotometer	Reagents	700	6	4,200
Atomic Absorption	Reagents	1,500	6	9,000
Chemical Reactors Apparatus	Reagents	2,000	1	2,000
Solid-Liquid Extraction Unit	Reagents	3,500	1	3,500
Service Unit of Water Treatment Pilot Plant	Reagents	2,000	1	2,000
	Total			109,110

(2) Operation and maintenance cost analysis

From the above, additional annual operating and maintenance expenses will be approximately 109 thousand EGP (approximately 1,676 thousand JPY) as shown in Table 5-2. The amount is approximately 20.8% of the total budget for maintenance in the year of 2014, which is approximately 525 thousand EGP (approximately 8,063 thousand JPY) in the next Table 5-3, the transition in E-JUST Administration Budget. Thus, it can be said that this operating and maintenance expenses are affordable.

Table 5-3 Transition in E-JUST Administration Expenditures (Unit : EGP)

Budgetary Items	2012	2013	2014
Academic salaries	9,307,421	9,566,278	13,293,353
Admin salaries	4,087,872	6,187,539	7,069,456
Travel expenses	1,027,075	522,140	615,786
Training	1,895	2,000	348,025
Utilities	789,298	959,185	1,149,795
Vehicles expenses	731,944	1,069,191	364,631
Total maintenance	179,908	90,032	524,904
Public relations	380,022	496,605	787,627
Education and research	1,788,784	1,242,151	1,727,493
Advisory	20,000	20,000	22,030
Stationary/consumable	164,689	65,978	477,952
License fee	182,917	350,574	1,082,900
Others	111,851	34,970	14,940
Total	18,773,676	20,606,643	27,478,892

JAPANESE GRANT

The Japanese Grant (hereinafter referred to as the "Grant") is non-reimbursable fund provided to a recipient country to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. The Grant is not supplied through the donation of materials as such.
Based on a JICA law which was entered into effect on October 1, 2008 and the decision of the GOJ, JICA has become the executing agency of the Japanese Grant for Projects for construction of facilities, purchase of equipment, etc.

1. Grant Procedures

The Grant is supplied through following procedures :

- Preparatory Survey
  - The Survey conducted by JICA
- Appraisal &Approval
  - -Appraisal by the GOJ and JICA, and Approval by the Japanese Cabinet
- Authority for Determining Implementation
  - -The Notes exchanged between the GOJ and a recipient country
- Grant Agreement (hereinafter referred to as "the G/A")
  - -Agreement concluded between JICA and a recipient country
- Implementation
  - -Implementation of the Project on the basis of the G/A

2. Preparatory Survey

(1) Contents of the Survey

The aim of the preparatory Survey is to provide a basic document necessary for the appraisal of the Project made by the GOJ and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of relevant agencies of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.
- Preparation of an outline design of the Project.

- Estimation of costs of the Project.

The contents of the original request by the recipient country are not necessarily approved in their initial form as the contents of the Grant project. The Outline Design of the Project is confirmed based on the guidelines of the Japanese Grant scheme.

JICA requests the Government of the recipient country to take whatever measures necessary to achieve its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization of the recipient country which actually implements the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country based on the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Survey, JICA employs (a) consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

(3) Result of the Survey

JICA reviews the Report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the appropriateness of the Project.

3. Japanese Grant Scheme

(1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes(hereinafter referred to as "the E/N") will be singed between the GOJ and the Government of the recipient country to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the recipient country to define the necessary articles, in accordance with the E/N, to implement the Project, such as payment conditions, responsibilities of the Government of the recipient country, and procurement conditions.

(2) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the recipient country to continue to work on the Project's implementation after the E/N and G/A.

(3) Eligible source country

Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are

to be purchased. The Grant may be used for the purchase of the products or services of a third country, if necessary, taking into account the quality, competitiveness and economic rationality of products and services necessary for achieving the objective of the Project. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals", in principle.

(4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals, in principle. Those contracts shall be verified by JICA. This "Verification" is deemed necessary to fulfill accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Project, the recipient country is required to undertake such necessary measures as Annex. The Japanese Government requests the Government of the recipient country to exempt all customs duties, internal taxes and other fiscal levies such as VAT, commercial tax, income tax, corporate tax, resident tax, fuel tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract, since the Grant fund comes from the Japanese taxpayers.

(6) "Proper Use"

The Government of the recipient country is required to maintain and use properly and effectively the facilities constructed and the equipment purchased under the Grant, to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Grant.

(7) "Export and Re-export"

The products purchased under the Grant should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account under the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"), in principle. JICA will execute the Grant by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment

commissions paid to the Bank.

(10) Environmental and Social Considerations

The Government of the recipient country must carefully consider environmental and social impacts by the Project and must comply with the environmental regulations of the recipient country and JICA Guidelines for Environmental and Social Consideration (April, 2010) .

(11) Monitoring

The Government of the recipient country must take their initiative to carefully monitor the progress of the Project in order to ensure its smooth implementation as part of their responsibility in the G/A, and must regularly report to JICA about its status by using the Project Monitoring Report (PMR).

(12) Safety Measures

The Government of the recipient country must ensure that the safety is highly observed during the implementation of the Project.

(13) Construction Quality Control Meeting

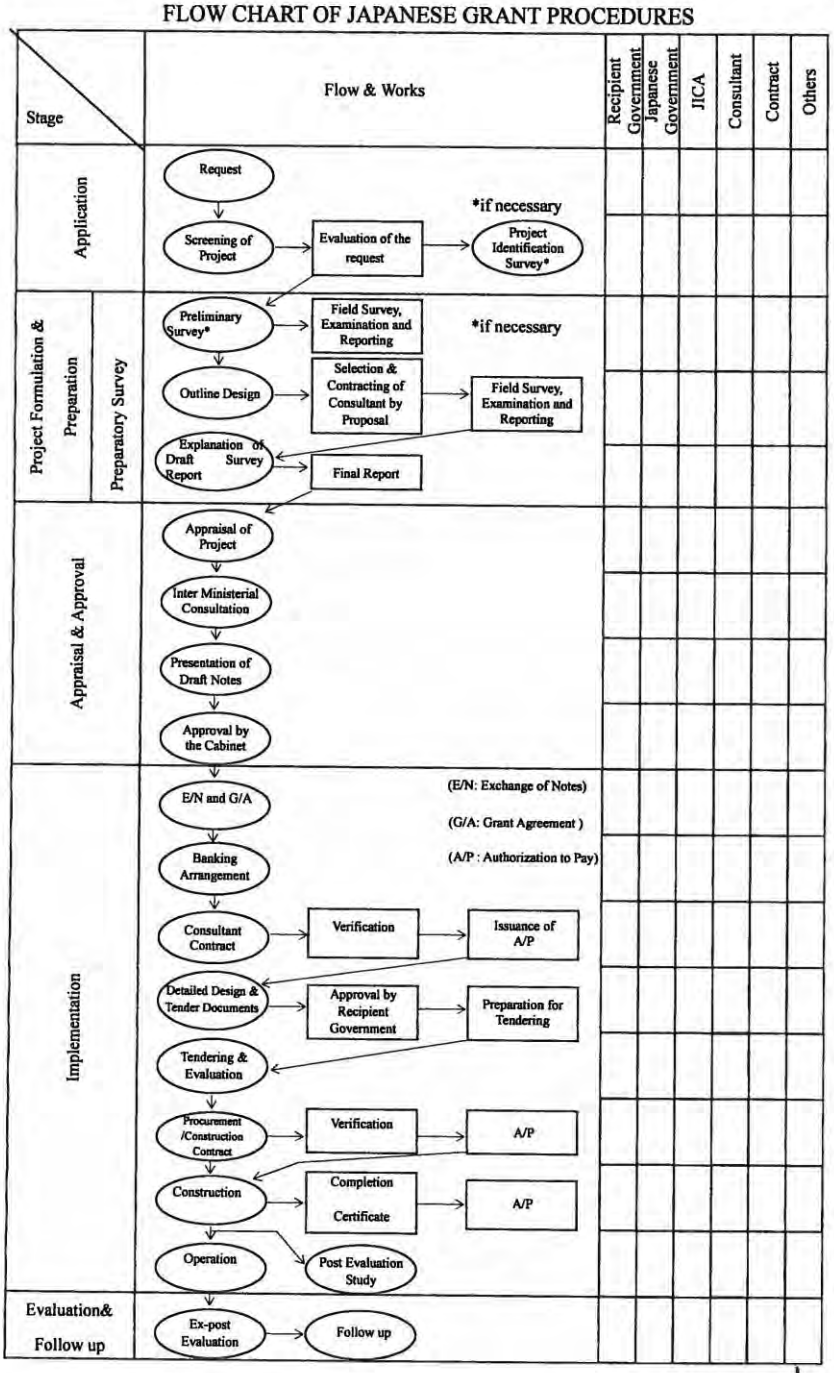
Construction Quality Control Meeting (hereinafter referred to as the "Meeting") will be held for quality assurance and smooth implementation of the Works at each stage of the Works. The member of the Meeting will be composed by the Client, the Consultant, the Contractor and JICA. The functions of the Meeting are as followings:

a) Sharing information on the objective, concept and conditions of design from the Contractor, before start of construction.

b) Discussing the issues affecting Works such as modification of the design, test, inspection, safety control and the Client's obligation, during of construction.

Annex 5

FLOW CHART OF JAPANESE GRANT PROCEDURES



5-1

Financial Flow of Grant Aid (A/P Type)

Annex 6

Annex 7

Schedule for the Commencement of the Undergraduate Program of the Faculty of Engineering

Year	Month	Target
2013	May	First Joint workshop on Undergraduate (UG) program development
2014	May	UG program task force was formed
2015	May	The outline of UG program has been reported in the 11th BOT Meeting
	August	First workshop with the Head of Sector of Engineering, Supreme Council of Universities (SCU)
	November	Second communication with the Head of Sector of Engineering, SCU
	December	The progress of the UG Program preparation was reported in the 12th BOT Meeting
2016	January	Second joint workshop on UG program development
		Submission of the application of the UG Program to SCU (including curriculum, syllabus, course profile, ILO, assessment, teaching methodologies, the number of academic staff, schematic drawing and so on)
	January - March	Feedback from SCU to E-JUST Answers by E-JUST to SCU
	April	Primary approval of UG program by SCU (Engineering Sector)
	June	Endorsement by SCU (Engineering Sector) to support issuing the Prime Minister's decree to launch of the UG Program (the BOT chair will send the request letter to the Prime Minister Office)
2017	April	Field visit and discussion in E-JUST by the SCU committees
	June	Issue of Ministerial decree by MoHE for starting the UG program

Schedule of the Campus Construction

1. Basic Infrastructure

Year	Month	Target
2015	July	Land acquisition has been completed
2015	November	Detail Design has been completed
2016	January	Tender document has been completed
		Approval of direct order by the Egyptian government
	February	Commencement of construction
	November	Completion of construction

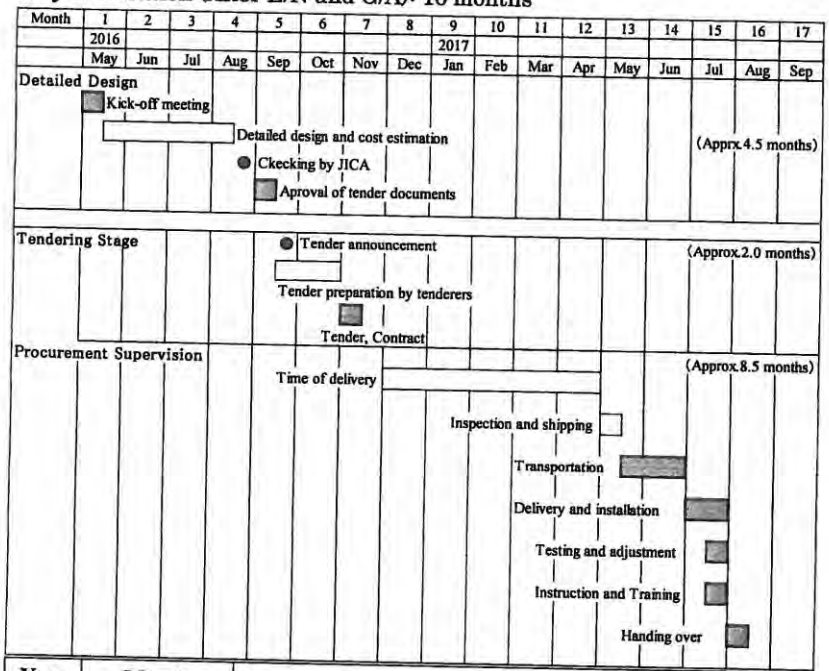
2. Building (Phase-1*)

Year	Month	Target
2015	July	Land acquisition has been completed
2016	January	Equipment utilities' plan will be submitted by the Preparatory Survey team to IAA
	April	Detail Design will be completed
		Tender document will be completed
	May	Approval of direct order by the Egyptian government
	June	Commencement of construction
2017	June	Completion of construction

*All equipment of the Project will be installed in the Phase 1 buildings.

Project Implementation Schedule

Project Duration (After E/N and G/A): 16 months



Year	Month	Target
2015	October	Outline Design Survey
2016	January	Draft of Design Survey
	March	Cabinet Approval
	April	E/N, G/A
	May	Contract of Consultant
	September	Tender Announcement
	November	Contract of Contractor
2017	April	Production and delivery of Equipment
	May	Custom Clearance by E-JUST
	July	Commencement of Installation of equipment
		Completion of Installation
		Test Operation by E-JUST
	August	Hand-over

Annex 10

Major Undertakings to be taken by Recipient Government

1. Before the Tender

NO	Items	Deadline	In charge	Cost	Ref.
1	To open Bank Account (Banking Arrangement (B/A))	May 2016 (within one month after G/A)	E-JUST	-	
2	To secure the project sites (840,000m^2)	July 2015	E-JUST	-	
3	To obtain the planning, zoning, building permit	before notice of the tender document	E-JUST	-	
4	To clear, level and reclaim the project sites (840,000m^2)	before notice of the tender document	E-JUST	-	
5	To submit the application of the Undergraduate Program of Faculty of Engineering to Supreme Council of University (SCU) Engineering Sector	January 2016	E-JUST	-	
6	To obtain the primary approval of the Undergraduate Program by SCU Engineering Sector	April 2016	E-JUST	-	
7	To approve the Detail Design (DD) submitted by the Consultant	August 2016 (the end of DD)	E-JUST	-	

2. During the Project Implementation

NO	Items	Deadline	In charge	Cost	Ref.
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A				
	1) Advising commission of A/P	June 2016(within 1 month after the singing of the contract)	MoIC, Central Bank ,Ministry of Finance, E-JUST	5,000 JPY (per notice)	
	2) Payment commission for A/P	every payment	MoIC, Central Bank ,Ministry of Finance, E-JUST	2 million JPY	
2	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country				
	Tax exemption and customs clearance of the products at the port of disembarkation	during the Project	E-JUST	-	
3	To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work	during the Project	E-JUST	-	
4	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the Products and/or the Services be be borne by its designated authority without using the Grant. Such customs duties, internal taxes and other fiscal levies mentioned above include sales tax and services tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract	during the Project	E-JUST, MoIC, MoF	-	
5	To bear all the expenses including construction of the facilities, other than those to be borne by the Grant Aid	during the Project	E-JUST	-	
6	To submit Project Monitoring Report with supported by Consultant	during the Project	E-JUST	-	MD

NO	Items	Deadline	In charge	Cost	Ref.
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities				
	1) Electricity The distributing line to the site	before start of the installation of the equipment (June 2017)	E-JUST	-	
	2) Water Supply The city water distribution main to the site	before start of the installation of the equipment (June 2017)	E-JUST	-	
	3) Drainage The city drainage main (for storm, sewer and others) to the site	before start of the installation of the equipment (June 2017)	E-JUST	-	
	4) Furniture and Equipment General and special furniture	before start of the installation of the equipment (June 2017)	E-JUST	-	
8	To complete basic infrastructure of E-JUST new campus	November 2016	E-JUST		
9	To complete the buildings of E-JUST new campus (Phase-I)	June 2017	E-JUST		
10	To complete the utilities required for equipment installation such as power source, water supply and drainage, plumbing and exhaust duct and reinforced foundation.	June 2017	E-JUST	Included in 9	Annex 14

3. After the Project

NO	Items	Deadline	In charge	Cost	Ref.
1	To maintain and use properly and effectively the equipment provided under the Grant Aid	After completion of the construction	E-JUST		
	1) Allocation of budget for basic consumables for operations(every year)	After completion of the handing over the equipment	E-JUST	1.67 million JPY	
	2) Allocation of maintenance budget (maintenance contract provided by the supplier including spare parts)	After completion of the warranty periods	E-JUST	(*)	
	3) Operation and maintenance organizational structure	After completion of the handing over the equipment	E-JUST		
	4) Routine check/Periodic inspection	After completion of the handing over the equipment	E-JUST		

(*)To be estimated during the tender and procurement phase

Annex 10

Major Undertakings to be Covered by the Japanese Grant

This Part is closed due to the confidentiality.

Project Monitoring Report
on
Project Name
Grant Agreement No. XXXXXXX
20XX, Month

Organization Information

Authority (Signer of the G/A)	Person in Charge _____ (Division) _____ Contacts Address: _____ Phone/FAX: _____ Email: _____
Executing Agency	Person in Charge _____ (Division) _____ Contacts Address: _____ Phone/FAX: _____ Email: _____
Line Agency	Person in Charge _____ (Division) _____ Contacts Address: _____ Phone/FAX: _____ Email: _____

Outline of Grant Agreement:

Source of Finance	Government of Japan: Not exceeding JPY _____ mil. Government of (_____): _____
Project Title	
E/N	Signed date: Duration:
G/A	Signed date: Duration:

1: Project Description

1-1 Project Objective

1-2 Necessity and Priority of the Project

- Consistency with development policy, sector plan, national/regional development plans and demand of target group and the recipient country.

1-3 Effectiveness and the indicators

- Effectiveness by the project

Quantitative Effect (Operation and Effect indicators)		
Indicators	Original (Yr)	Target (Yr)
Qualitative Effect		

2: Project Implementation

2-1 Project Scope

Table 2-1-1a: Comparison of Original and Actual Location

Location	**Original:** *(M/D)* **Attachment(s):Map**	**Actual:** *(PMR)* **Attachment(s):Map**

Table 2-1-1b: Comparison of Original and Actual Scope

Items	Original	Actual
(M/D)	*(M/D)*	*(PMR)* Please state not only th e most updated schedul e but also other past re visions chronologically.

'Soft component' shall be included in 'Items'.		All change of design shal l be recorded regardless of its degree.

(Sample)Table 2-1-1b: Comparison of Original and Actual Scope

Items	Original	Actual
1. Upgrading of the Kukum Highway	length 20km, single lane (3.47m*2), path(1.25m*2) Concrete Pavement 200mm (motor lane only)	length 20km, single lane (3.47m*2), path(1.00m*2) C oncrete Pavement 200mm (motor lane only)
2. Replacement of Old Mataniko Bridge	Bridge length 40m, Width 9.5m, path(1.00m*2), compound steel box-girder bridge, Inverted T type-abutment spread foundation	Ditto

(Sample)Table 2-1-1b: Comparison of Original and Actual Scope

Items	Original	Actual
1. Outpatient Department	RC, Double Storey Ground floor: Consultation room 6 Reception Satellite Lab. Pharmacy, etc 1st floor: Consultation room 5 Dental Clinic 2	RC, Double Storey Ground floor: Consultation room 5 ditto
2. Operation Theatre, Casualty Unit, Maternity Ward	RC, Double Storey Ground Floor: Operation room 2 Casualty Unit 1st Floor: Maternity Ward 50 beds	 ditto Maternity Ward 60 beds

(Sample)Table 2-1-1b: Comparison of Original and Actual Scope

Items	Original	Actual
1. Primary and Secondary Surveillance Radars at Chittagong Int'l Airport	i) OSR/SSR 1 set ii) RDP 1 set iii) VHF Transmitters 2 sets	Ditto
2. Access Control System for Dhaka Int'l Airport	1 set	Ditto
3. Doppler VOR/DME at Saidpur Airport	1 set	Ditto
4. Aerodrome Simulator for Civil Aviation Training Center	1 set	Ditto

5. Baggage Inspection System for Dhaka Int'l Airport	i) Hold Baggage Xray Inspectin system 7sets ii) Hold Baggage Explosive Trace Detecting System 7sets iii) Cabin Baggage Xray Inspection System 2sets	Ditto
6. Airport Fire Fighting Vehicles for Dhaka Int'l Airport	2 sets	3 sets

2-1-2 Reason(s) for the modification if there have been any.

(PMR)

2-2 Implementation Schedule
2-2-1 Implementation Schedule

Table 2-2-1: Comparison of Original and Actual Schedule

Items	Original		Actual
	DOD	G/A	
【M/D】 'Soft component' shall be stated in the column of 'Items'. Project Completion Date*	*(M/D)*		*(PMR)* As of (Date of Revision) Please state not only the most updated schedule but also other past revisions chronologically.

*Project Completion was defined as _____ at the time of G/A.

(Sample)Table 2-2-1: Comparison of Original and Actual Schedule

Items	Original		Actual
	DOD	G/A	
Cabinet Approval	11/2015	-	-
E/N	12/2015	1/2016	24/1/2016
G/A	12/2015	1/2016	24/1/2016 Amended 13/3/2017
Detailed Design	12/2015-4/2016	1/2016-5/2016	1/2016-5/2016
Tender Notice	5/2016	5/2016	1/6/2016
Tender	6/2016	6/2016	15/7/2016
(Lot1) Construction Period	7/2016-11/2018	7/2016-11/2018	8/8/2016-30/11/2018
(Lot2) Installarion of Equipement	7/2016-6/2018	7/2016-6/2018	6/8/2016-30/60/2017

Project Completion Date	11/2018	11/2018	30/11/2018
Defect Liability Period	11/2019	11/2019	30/11/2019

*Project Completion was defined as Check-out of Construction work at the time of G/A.

2-2-2 Reasons for any changes of the schedule, and their effects on the project.

2-3 Undertakings by each Government
2-3-1 Major Undertakings
See Attachment 2.

2-3-2 Activities
See Attachment 3.

2-3-3 Report on RD
See Attachment 4.

2-4 Project Cost
2-4-1 Project Cost

Table 2-4-1a Comparison of Original and Actual Cost by the Government of Japan
(Confidential until the Tender)

Items			Cost (Million Yen)	
	Original	Actual	Original	Actual
Construction Facilities (or Equipment)	'Soft component' shall be included in 'Items'.			Please state not only the most updated schedule but also other past revisions chronologically.
Consulting Services	- Detailed design -Procurement Management -Construction Supervision			
Total				

Note: 1) Date of estimation:
2) Exchange rate: 1 US Dollar = Yen

Table 2-4-1b Comparison of Original and Actual Cost by the Government of XX

Items			Cost (Million USD)	
	Original	Actual	Original	Actual
				Please state not only the most

				updated schedule but also other past revisions chronologically.
Total				

Note: 1) Date of estimation:
2) Exchange rate: 1 US Dollar = (local currency)

(Sample)Table 2-4-1a Comparison of Original and Actual Cost by the Government of Japan
(Confidential until the Tender)

Items			Cost (Million Yen)	
	Original	Actual	Original[1),2)]	Actual
Construction Facilities	1. Outpatient Department 2. Operation Theatre, Casualty Unit, Maternity Ward	Ditto Ditto	1,169.5	1,035.0
Equipment	1) Primary and Secondary Surveillance Radars at Chittagong Int'l Airport 2) Access Control System for Dhaka Int'l Airport 3) Doppler VOR/DME at Saidpur Airport 4) Aerodrome Simulator for Civil Aviation Training Center 5) Baggage Inspection System for Dhaka Int'l Airport 6) Airport Fire Fighting Vehicles for Dhaka Int'l Airport	Ditto	2,374.6	2,110.0
Consulting Services	- Detailed design -Procurement Management -Construction Supervision -Soft Component	Ditto	0.87	0.87
Total			3544.97	3145.87

Note: 1) Date of estimation: October, 2014
2) Exchange rate: 1 US Dollar = 99.93 Yen

(Sample)Table 2-4-1b Comparison of Original and Actual Cost by the Government of Bangladesh

Items			Cost (1,000 Taka)	
	Original	Actual	Original[1),2)]	Actual
Dhaka International Airport	Modification of software of existing Rader Data Processing System	Ditto	8,000	9,240
	Provision of a partition, lighting, air conditioning and electric power supply at transfer hold baggage check point	Ditto	5,000	2,453

	Replacement of five doors in the international passenger terminal building	Ditto	4,000	5,340
Chittagong Int'l Airport	Preparation of the radar site including felling of trees, clearing and grabbing	Ditto	5,000	3,400
Total			22,000	20,433

Note: 1) Date of estimation: October, 2014
2) Exchange rate: 1 US Dollar = 0.887 Bangladesh Taka (local currency)

2-4-2 Reason(s) for the wide gap between the original and actual, if there have been any, the remedies you have taken, and their results.

(PMR)

2-5 Organizations for Implementation

2-5-1 Executing Agency:

- Organization's role, financial position, capacity, cost recovery etc,
- Organization Chart including the unit in charge of the implementation and number of employees.

Original: *(M/D)*

Actual, if changed: *(PMR)*

2-6 Environmental and Social Impacts

- The results of environmental monitoring as attached in Attachment 5 in accordance with Schedule 4 of the Grant Agreement.
- The results of social monitoring as attached in Attachment 5 in accordance with Schedule 4 of the Grant Agreement.
- Information on the disclosed results of environmental and social monitoring to local stakeholders, whenever applicable.

3: Operation and Maintenance (O&M)

3-1 O&M and Management

- Organization chart of O&M
- Operational and maintenance system (structure and the number ,qualification and skill of staff or other conditions necessary to maintain the outputs and benefits of the project soundly, such as manuals, facilities and equipment for maintenance, and spare part stocks etc)

Original: *(M/D)*
Actual: *(PMR)*

3-2 **O&M Cost and Budget**
- The actual annual O&M cost for the duration of the project up to today, as well as the annual O&M budget.

Original: *(M/D)*

4: Precautions (Risk Management)

- Risks and issues, if any, which may affect the project implementation, outcome, sustainability and planned countermeasures to be adapted are below.

Original Issues and Countermeasure(s): *(M/D)*	
Potential Project Risks	Assessment
1.	Probability: H/M/L
(Description of Risk)	Impact: H/M/L
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action during the Implementation:
	Contingency Plan (if applicable):
2.	Probability: H/M/L
(Description of Risk)	Impact: H/M/L
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action during the Implementation:
	Contingency Plan (if applicable):

3.	Probability: H/M/L
(Description of Risk)	Impact: H/M/L
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action during the Implementation:
	Contingency Plan (if applicable):
Actual issues and Countermeasure(s)	
(PMR)	

5: Evaluation at Project Completion and Monitoring Plan

5-1 Overall evaluation

Please describe your overall evaluation on the project.

5-2 Lessons Learnt and Recommendations

Please raise any lessons learned from the project experience, which might be valuable for the future assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

5-3 Monitoring Plan for the Indicators for Post-Evaluation

Please describe monitoring methods, section(s)/department(s) in charge of monitoring, frequency, the term to monitor the indicators stipulated in 1-3.

Attachment

1. Project Location Map
2. Undertakings to be taken by each Government
3. Monthly Report
4. Report on RD
5. Environmental Monitoring Form / Social Monitoring Form
6. Monitoring sheet on price of specified materials (Quarterly)
7. Report on Proportion of Procurement (Recipient Country, Japan and Third Countries) (Final Report Only)

Monitoring sheet on price of specified materials

1. Initial Conditions (Confirmed)

	Items of Specified Materials	Initial Volume A	Initial Unit Price (¥) B	Initial total Price C=A×B	1% of Contract Price D	Condition of payment	
						Price (Decreased) E=C−D	Price (Increased) F=C+D
1	Item 1	●●t	●	●	●	●	●
2	Item 2	●●t	●	●	●		
3	Item 3						
4	Item 4						
5	Item 5						

2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring : ●●

(2) Result of the Monitoring Survey on Unit Price for each specified materials

	Items of Specified Materials	1st ●month, 2015	2nd ●month, 2015	3rd ●month, 2015	4th	5th	6th
1	Item 1						
2	Item 2						
3	Item 3						
4	Item 4						
5	Item 5						

(3) Summary of Discussion with Contractor (if necessary)

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Attachment 7

Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)
(Actual Expenditure by Construction and Equipment each)

	Domestic Procurement (Recipient Country) A	Foreign Procurement (Japan) B	Foreign Procurement (Third Countries) C	Total D
Construction Cost	(A/D%)	(B/D%)	(C/D%)	
Direct Construction Cost	(A/D%)	(B/D%)	(C/D%)	
others	(A/D%)	(B/D%)	(C/D%)	
Equipment Cost	(A/D%)	(B/D%)	(C/D%)	
Design and Supervision Cost	(A/D%)	(B/D%)	(C/D%)	
Total	(A/D%)	(B/D%)	(C/D%)	

Annex 12 - /

E-JUST Budget for 2016-2017

Operational Expenditures		2016/2017 (EGP000)
Chapter 6 + Self Finance	Academic Wages & Salaries (1)	28,000
	Administrative Wages and Salaries (2)	13,500
	Training (10% of Admin Salaries)	1,350
Chapter 2,4,5 (covering Operating Expenses except wages and salaries)	Academic Travel	600
	Administrative Travel	300
	Vehicles & Transportation (fuel , rent etc)	1,000
	Utilities Expenses	3,500
	Stationary & printing	700
	Maintenance	5,500
	Public Relation	1,000
	Fees, Duties, Fiscal Exp & License	2,000
	Advisory Expenses	50
	Other Expenses	700
	Academic (Lab) Research (consumables..)	1,100
	Students Expenses (Conferences...)	5,000
Total Operational Expenses		64,300
Capital Items		
Chapter 6	Non Residential Building (3)	850,000
	Residential Building (3)	150,000
	Construction (3)	150,000
	Transportation & Vehicles	2,000
	Equipment (4)	25,000
	Furniture & Installation (3)	15,000
Total Capital Expenditures		1,192,000
Grand Total		1,256,300

Notes:
(1) Includes the NEW enrolled academics contracted on March 2017 i.e. 60% 0f steady academics (140 out of 234 members), including all deans and dept. heads)
(2) Include 70% of the NEW enrlled administrative staff (83 employees out of 119 needed)
(3) Main Campus which will be a direct order from the Government to contractors
(4) Remaining of class A and B

E-JUST Academic Staff Recruitment Schedule for Faculty of Engineering

Requirements

Rank	Total Planned	Planned to be available by March 2017	Currently Available Number	Planned to contract with by March 2017
Professor	30	18	13	5
Associate Professor	50	30	11	19
Assistant Professor	43	26	5	21
	123	74	29	45

Schedule:

Announcement	Starting Date	Closing Date	Short List	Interviews and Contracting	Contract Effective Date
First		Closed	Under Preparation	Feb.-March 2016	March,01,2017
Second	March, 31,2016	Apr., 30, 2106	June,30,2016	July-August 2016	March,01,2017
Third (if needed)	Sept, 30,2016	Oct., 31, 2016	Dec.,31, 2016	Jan.- Feb., 2017	March,01,2017

Annex 12 - 2

E-JUST Administrative Staff Recruitment Schedule for Faculty of Engineering

Requirements

Rank	Total Planned	Planned to be available by March 2017	Currently Available Number	Planned to contract with by March 2017
Director	3	3	3	0
Manager	17	17	5	12
Office Head	42	28	5	23
S. Specialist & Specialist	61	75	55	20
Assistant Service Staff	48	48	48	0
	171	171	116	55

Schedule:

Announcement	Starting Date	Closing Date	Short List	Interviews and Contracting	Contract Effective Date
First		Closed	Under Preparation	Feb.-March 2016	Contracting Date
Second	Apr., 30,2016	May., 31, 2106	June,30,2016	July, 2016	Contracting Date
Third (if needed)	Oct., 31,2016	Nov., 30, 2016	Dec.,31, 2016	Jan., 2017	Contracting Date

Equipment List

Code No.	Equipment Name	Q'ty
01. Basic Science Lab. – 1		
01-1	Electro analytical scale	14
01-3	Water purifying system	1
01-4	Ice Maker	1
01-5	pH Meter	27
01-7	Digital Multimeter	27
01-8	DC Power Supply	27
01-9	Absorption Spectrophotometer	14
01-10	Constant-temperature Bath	27
01-11	Micro melting point apparatus	14
01-12	Heating Block	27
01-13	Polarimeter	14
01-14	Centrifuge	7
01-15	Quantum Chemical Simulation Software	27
01-16	Magnetic Stirrer	27
01-17	UV Light Source	27
02. Basic Science Lab. – 2		
02-2	Universal Interface	14
02-3	Data Acquisition Software	1
02-4	Combined Gas Law Kit	14
02-5	2-Axis Magnetic Field Sensor	14
02-6	Coil and Voltage Sensor	14
02-7	Jolly Spring Balance	14
02-8	Water calorimeter	14
02-9	Digital Multimeter	56
02-10	Optical Bench Set	14
02-11	He-Ne Laser	14
02-12	He-Ne Laser Base Mount	14
02-13	Simple Spectrometer	14
02-14	Line Spectrum Light Source	2
02-15	Measurement System of Temperature Coefficient of Metal Resistance	14
02-16	DC Power Supply	14
02-17	Thermo Electromotive Force Measuring Apparatus	14
02-18	Absorption of Beta-Ray A	14
02-19	Absorption of Beta-Ray B	14
02-20	Electron Specific Charge Measurement System	14
02-21	Planck Constant Measurement System	14
03. Computer Programming. Lab.		
03-6	Interactive Whiteboard System	1
03-7	High Definition Projector	2
03-13	Intelligent Lectern	1
04. Materials Science Lab.		
04-1	Tensile Testing Machine	5
04-5	Thermal Expansion Trainer	5
04-6	Thermal Conductivity Trainer	5
04-7	Resistivity and Band Gap Measurements	10
04-8	Magnetism Measurement	10
04-10	Trinocular Microscope	5
04-11	Data Acquisition Using LabVIEW	10
04-12	Rockwell Hardness Tester	5
04-13	Viscometer	10
04-15	Vernier Caliper	20

Equipment List

Code No.	Equipment Name	Q'ty
04-16	Micrometer	20
04-17	Electric Balance	5
04-18	Thermocouple	15
05. Basic Engineering Lab. 1		
05-10	Desktop PC and monitor	14
05-11	Electrical Measurement Instrument Set	14
05-12	Electrical Circuits Kit	14
05-13	PCB CNC machines	1
05-14	Data Acquisition Systems	14
05-15	Electronic Counters	14
06. Basic Engineering Lab. 2		
06-1	Titrations Experiment (5 models)	10
06-2	Electrochemical Process Experimental	10
06-3	Fuel Cell Trainer	1
06-4	UV/vis Spectrophotometer	3
06-5	Chemical Process Industrial System	10
06-6	Clean Energy Trainer	3
06-7	Atomic Absorption	2
06-8	Thermal Conductivity of Building Materials	5
06-9	Gas/Liquid Heat Conduction Trainer	5
06-10	Temperature Measurement Trainer	5
06-11	Pressure Measurement Trainer	5
06-12	Convection and Radiation	5
06-13	Steam Distillation Unit	1
06-14	Autoclave	3
06-15	Laboratory Furnace	2
06-16	UV Water Purification System	2
07. Electronics and Circuits Lab.		
07-2	Electronics Circuits Lab	14
07-3	Electronics Circuits Kit	14
07-4	PCB CNC machines	1
08. Mechanical Workshop 1		
08-1	Universal Grinding Machine	3
08-2	Hydraulic Press	1
08-3	Universal Milling Machine	6
08-4	Centrifugal Casting Set	3
08-5	Forging Induction Furnace	2
08-6	Forging Press	2
08-7	Mechanics Lathe with Milling Unit	6
08-8	Sand Casting Kit	10
08-9	Bell Casting Set	6
08-10	Lathe	6
08-11	Foundry Sand Mixing Unit	3
08-12	Portable MIG/TIG Welder	6
08-13	Bench Mounted Column Drill	3
08-14	Column Drill	3
08-15	Welding Booth	6
08-16	Spot Welding Unit with Arm Set	6
08-17	Manual Hydraulic Workshop Press	6
08-18	Arbor Press	3
08-19	Manual Arc Welding Station	6
08-20	Melting Furnace for Light Metal	2

Equipment List

Code No.	Equipment Name	Q'ty
08-21	Universal Bender	3
08-22	Sheet Metal Forming Combination Machine	3
08-23	Hydraulic Tube Bender	3
08-24	Portable Oxyacetylene Welding Unit	6
08-25	Angle Iron Bender	3
08-26	Analog Measuring Tool Set	12
08-39	Conventional Cylindrical Grinding Machine	1
08-40	Universal Tool Grinding Machine	2
08-41	Dual Pedestal Grinder	3
08-42	Semi-Automatic Miter Band Saw	1
08-43	Hydraulic Surface Grinder	1
08-44	Sanding and Polishing Machine	2
10. Mechanical Workshop 2		
10-2	Laser Cutting System	1
10-4	Surface Metrology and Form Measurement System	1
10-5	Basic CNC Training Center	1
10-6	Water-Jet Cutting System	1
10-8	Hydraulic Surface Grinder	1
10-9	Multipurpose Milling Machine	2
10-10	Precision Lathe	2
10-11	CNC Electric Wire Discharge Machine	1
10-12	Electric Discharge Machine	1
10-13	Semi-Automatic Miter Band Saw	1
10-15	Drill Press	1
10-16	Column Drill	2
10-17	Electronic Hardness Tester	1
10-18	Universal Tool Grinding Machine	1
10-25	Radial Drill Press	1
10-52	CNC Universal Turning Machine	1
10-53	Hardness Tester	1
10-54	Sandling and Polishing Machine	1
11. Drawing Studios		
11-2	Interactive Whiteboard System	1
11-3	High Definition projector	2
11-4	Instructor Graphics Workstation	1
11-5	A0 Plotter	2
11-6	Desktop 3D printer	10
11-7	Application server	1
11-8	Intelligent Lectern	1
11-9	Smart graphics touch screen	1
12. Automatic Control Lab.		
12-1	Analog and Digital DC Servo System	2
12-2	Magnetic Levitation System	2
12-3	Digital Pendulum	2
12-4	Coupled Tanks System	2
12-5	Level/Flow Process Control	2
12-6	Temperature Process Control	2
12-7	Pressure Process Control	2
12-8	Ball & Beam Apparatus	2
12-10	Allen Bradley PLC Trainer	1
12-11	Siemens PLC Trainer	1
13. Mechanical Vibrations Lab.		

Equipment List

Code No.	Equipment Name	Q'ty
13-1	Universal Vibration Apparatus	2
13-2	Vibration Sensor with Clamping Set	2
13-3	Whirling of Shafts Apparatus	2
13-4	Dynamic Balancing Machine	2
13-5	Impact Test Hammer	2
13-6	Machinery Diagnostic System	2
13-7	Computerized Vibration Analyzer	2
(15+18) Microprocessor & Digital Systems		
15+18-2	Electrical Measurement Instrument Set	8
15+18-3	Digital Systems Kit	8
15+18-4	Microprocessors and Microcontroller kit	8
15+18-5	Digital Pattern Generator	2
15+18-6	Logic Analyzer	2
15+18-7	Embedded Vision Starter Kit	8
15+18-8	Development Board	8
15+18-9	Raspberry pi kit	8
15+18-10	Arduino kit	8
15+18-11	Development kit	8
09. MONOTSUKURI Center		
09-1	Digital Oscilloscope	2
09-2	Digital Multimeter	2
09-4	Regulated Power Supply A	2
09-5	Regulated Power Supply B	1
09-6	Inverted phase-contrast microscope	1
09-7	Stereo Microscope	1
09-8	System Microscope	1
09-9	Scanning Electron Microscope	1
09-10	Water Purifier for Highly Purified Distilled Water	1
09-12	Helium Leak Detector	1
09-14	Fused Deposition Modeling 3D Printer	1
09-15	Stereo lithography 3D Printer	1
09-16	CNC Desktop Milling Machine	1
09-17	Cutting Plotter	1
25. IEM Applications Lab.		
25-1	PC + Monitor	20
25-10	Applications server	1
25-19	Intelligent Lectern	1
25-20	A0 plotter	1
25-21	Instructor Graphics Workstation	1
25-22	high resolution projector	2
25-23	Graphics Editing touch tablets	1
26. CAD RE Lab.		
26-1	PC + Monitor	20
26-2	Graphics Touch Tablets	21
26-3	Interactive Whiteboard System	1
26-4	3D printer A	1
26-5	3D printer B	10
26-6	A0 Plotter	1
26-7	Application Server	1
26-11	Graphics Editing Touch Tablets	1
26-13	Desktop 3D Scanner	11
26-14	Portable Articulated Arm CMM	1

Equipment List

Code No.	Equipment Name	Q'ty
26-15	Instructor Graphics Workstation	1
26-16	High Resolution Projector	2
26-21	CO2 laser cutting systems	1
26-22	Mechanics Lathe	1
26-24	Drill Press/Milling Machine	1
28. Manufacturing Lab.		
28-79	Master CNC Training Center including CNC Lathe and Vertical Machining Center	1
29. Ergonomics Lab.		
29-1	Biomedical Measuring System	2
29-2	Precise Anthropometric Measuring Tools	3
29-3	High Pull Force Equipment	3
29-4	Ergonomic Assessment Tools	3
29-5	Precise Anthropometric Measuring Tools	3
29-6	Goniometer Set	3
29-7	Whole Body Vibration Exposure Assessment	2
29-8	Heavy Duty Vibration Meter	3
29-9	Eye Movement Recorder	1
29-10	Advanced Ergonomics Testing Kit and software	3
29-11	Physical Work and Function Capacity Evaluation System	2
29-12	Occupational Skills Assessment Test Battery	3
29-13	Electronic Fitness Cycle	2
29-14	Reaction and Movement Time Panel with Psymcon Control	3
29-15	High Speed Digital Camcorder	2
29-16	Portable Sound and Vibration Analyzer	2
29-17	Personal Vibration Monitor	3
29-18	Whole-Body Vibration Dosimeter and Analyzer	3
29-19	Handheld Weather Station	3
29-21	Flicker Value Measurement Instrument	3
29-22	Infrared Thermometer	3
29-23	Lux-Meter	3
30. CIM Lab.		
30-1	Flexible Manufacturing System	1
30-2	Interactive Whiteboard System	1
30-4	RFID Training Kit	4
30-5	RFID Development Lab Kit	4
31. Precision Engineering		
31-1	Measuring Tool Kit	8
31-2	External Digital Micrometer	8
31-3	Depth Micrometer	8
31-4	Digital Vernier Caliper	8
31-5	Gauge Blocks Sets	8
31-6	Magnetic Measuring Stand	4
31-7	V- Blocks	10
31-8	Thread Gauge	4
31-10	Comparators Stand	10
31-11	Dial Gauge (English and Metric)	8
31-12	Horizontal Leveling Instrument	6
31-13	Square Leveling Instrument	6
31-14	Digital Protractor	8
31-15	Vernier Protractor	8
31-16	Thread Gauge	4
31-17	Height Digital Gauge	6

Equipment List

Code No.	Equipment Name	Q'ty
31-18	Thread Gauge	4
31-19	Surface Plate	1
31-20	Small Surface Plate	8
31-22	Tool Makers Microscope	1
31-23	Thread Testing Machine	3
31-25	Profile Projector	1
31-26	Inside Micrometer Set "A"	6
31-27	Inside Micrometer Set "B"	6
31-28	Bench Center	2
31-29	Micrometer Stands	10
31-31	Depth Micrometer 0-100 mm	8
31-32	Internal Micrometer 5-30 mm	8
31-33	Verner Caliper 1/50	8
31-34	Vernier Caliper 1/20	8
31-35	High Resolution Projector	1
33. Mechatronics and Robotics Lab.		
33-1	Robot Arm	3
33-2	Aerial Vehicle	2
33-3	Humanoid Robot Kit	4
33-4	Universal Mechanism Kit	2
33-5	Pneumatics and Electro-Pneumatics System	1
33-6	DC Transport System Workstation	1
33-7	AC Transport System Workstation	1
33-8	Sorting Station	1
33-9	Assembly Station	1
33-10	Processing Station	1
33-11	Testing Station	1
33-12	Handling Station	1
33-13	Storage Station	1
33-14	Routing Station	1
33-15	Buffering Station	1
33-16	Disassembly by Robot Station	1
33-17	Production Line with 3/4 Subsystems	1
33-18	Robot Technology for Mechatronics Applications	1
33-19	Assembly Technology Training Set	1
33-20	IMS Sensor Case	1
33-21	IMS Virtual Package	1
33-22	Robot Modules	12
34. Materials Testing and Characterization Lab.		
34-1	Rockwell Hardness Tester	1
34-2	Vickers Hardness Tester	1
34-3	Friction and Wear Testing Machine	1
34-4	Universal Material Tester	1
34-5	Ultrasonic Flaw Detector	3
34-6	Benchtop XRD	1
34-7	Upright Microscope	2
34-9	Stereoscope	4
34-12	Viscometer	2
34-13	UV/ Vis Spectrophotometer	1
34-14	FT-IR Spectrometer	1
34-16	Four(or two) Point Probe	1
34-17	Mechanical Polishing Machine	3

Equipment List

Code No.	Equipment Name	Q'ty
34-18	Compression Mounting	1
34-19	Balances	5
34-21	Creep Testing Machine	2
35. Materials Processing Lab.		
35-1	Ball Milling	2
35-2	Mixer	1
35-3	Thieves	2
35-4	Hydraulic Presses	1
35-5	Induction Furnace (100gm)	3
35-6	Potentiostate and Galvanostate	1
35-7	Refrigerator and Freezer	1
35-8	Electric Balance	5
35-9	Muffle Furnace	3
35-10-1	Rolling Machine A	1
35-10-2	Rolling Machine B	2
35-11	Cutting Machine	2
35-12	Impact Testing Machine	1
35-13	Vacuum Tube Furnace	2
35-14	Dry Oven	2
35-15	Hot Plate	5
35-16	Ice Making Machine	1
35-17	Double Water Distiller	2
35-18	Automatic Potential Tiltrotor	2
35-19	Heated Ultrasonic Cleaner	3
35-20	Homogenizer	2
35-21	Centrifuge	3
35-23	Hydraulic Lamination Hot Press	1
35-25	Single Screw Extruder for Lab.	1
37. ECE PBL		
37-1	Computer Interface Base Unit	6
37-10	Android Mobile A	3
37-13	Instrumentation Package	6
37-14	Rraspberry Pi processor	12
37-15	DSP Starter Kit A	6
37-16	DSP Starter Kit B	6
37-17	Spectrum Analyzer	1
37-18	Android Tablet A	3
37-19	Android Tablet B	3
37-22	Android Mobile B	3
36. Advanced Electronics		
36-1	Operational Amplifier Circuit Trainer	12
36-2	Electronics Demonstration System	12
36-3	Function Generator	12
36-4	Digital Multimeter	12
36-5	Digital Storage Oscilloscope	12
36-6	DC Power Supply	12
38. Optical Comm		
38-1	Fiber Optics Educational Kit	3
38-2	Fiber Cleaver	3
38-3	Scientific Grade Optical Breadboard	6
38-4	Single-Mode Fiber Optics "A"	3
38-5	Single Mode Fiber Optics "B"	2

Equipment List

Code No.	Equipment Name	Q'ty
38-6	DC Power Supply	3
38-7	OptiSystem Perpetual Software "A"	1
39. Solid State		
39-1	Electronics Demonstration System A	7
39-2	Electronics Demonstration System B	7
40. RF Circuits		
40-4	RF Cable for Vector Signal Generator	1
40-16	DC Power Supply	4
40-17	Function Generator	4
40-18	Digital Multimeter	4
40-19	Digital Storage Oscilloscope	4
40-20	AM Transceiver	4
40-21	RF System Design Kit	4
40-22	FM Transceiver	4
14. Electronics		
14-1	Basic Electronics lab	12
41. Microwaves & Antenna		
41-1	Antenna Training and Measuring System "A"	1
41-2	Antenna Training and Measuring System "B"	1
41-4	Vector Network Analyzer	1
41-5	Calibration Kit for Vector Network Analyzer	1
41-6	Adapter "A" for Vector Network Analyzer	4
41-7	Adapter "B" for Vector Network Analyzer	4
41-8	Adapter "C" for Vector Network Analyzer	4
41-9	Adapter "D" for Vector Network Analyzer	4
41-10	Adapter "E" for Vector Network Analyzer	4
41-11	Adapter "F" for Vector Network Analyzer	4
41-12	RF cable "A" for Vector Network Analyzer	2
41-13	RF cable "B" for Vector Network Analyzer	2
41-14	RF cable "C" for Vector Network Analyzer	2
41-15	Circular Polarized Antennas	1
41-16	Horn Antenna	1
98. EPE PBL		
98-1	Basics Interface Unit	8
98-2	Three-Phase Technology Unit	2
98-3	Magnetism / Electromagnetism Unit	2
98-4	Photovoltaics Unit	2
98-5	Transient Processes in AC and DC Networks	2
42. Power Electronics		
42-1	Basics Interface Unit	8
42-2	Line-Commutated Power Converters, 3-Phase	2
42-3	Self-Commutated Power Converters	2
42-4	Frequency Converter Drives	2
42-5	Active Power Factor Correction Unit	2
42-6	Line Commutated Converter Circuits 300W	2
42-7	Self-commutated converter circuits 300W	2
42-8	Field-oriented control of asynchronous machine with Matlab - Simulink 1kW	2
94. Electrical Machines Lab.		
94-5	Basics Interface Unit	14
94-6	Basics of DC Machines	2
94-7	Asynchronous Machines	2
94-8	Synchronous Motors and Generators	2

Equipment List

Code No.	Equipment Name	Q'ty
94-9	Stepper Motors	2
94-10	Linear Motors	2
94-11	BLDC/Servo Motors	2
94-12	Three Phase Transformers	2
94-13	DC Machines 300W	2
94-14	Three-Phase Motor with Slip-Rings	2
94-15	Synchronous Machines 300W	2
95. Switch Gear and Protection		
95-1	Investigations on Three-Phase Transmission Lines	2
95-2	Directional Overcurrent Time Protection for Lines	1
95-3	Overvoltage and Under voltage Protection	1
95-4	Earth Fault Protection	1
95-5	Power Protection	1
95-6	Motor Management Relays	1
95-7	Contactor Circuits in Three-Phase Systems 230V	1
96. Power Systems Analysis Lab.		
96-1	Manually operated synchronizing circuits	1
96-2	Automatic synchronizing circuits, automatic power control and automatic power factor control	1
96-3	Investigations on Three-phase Transmission Lines	1
96-4	Combined networks of cables and lines	1
96-5	Directional overcurrent time protection for lines	1
96-6	Busbar systems	1
96-7	Complex loads, power consumption measurement and peak load monitoring	1
96-8	Dynamic loads	1
43. Computing Workshop		
43-1	Laser Rangefinder	4
43-2	Data acquisition cards	4
43-3	Cameras for Windows	5
43-4	Illumination Sensors	4
43-5	IP Camera "A"	4
43-6	IP Camera "B"	4
43-7	GPS Sensor	4
43-8	Pressure sensor	4
43-9	Ultrasonic Sensor	4
43-10	Ultrasonic Distance Sensor	4
43-11	Khe3Base Kit with Board	2
43-12	Laser Range Finders with LRF Module	2
43-13	RC Programmable Helicopters	10
43-14	Laptop Computer MAC-Based	10
43-15	Laptop Computer Windows-Based	10
43-16	Tablet MAC-Based	10
43-17	Tablet Android-based	10
43-18	Light Field Camera	2
43-19	Camcorder	1
43-20	Digital Camera SLR	1
43-21	Robot "A"	10
43-22	Robotic Ball "A"	10
43-23	Robotic Ball "B"	10
43-24	Robot "B"	10
43-25	Surface Computer	3
43-26	3D Printer	5

Equipment List

Code No.	Equipment Name	Q'ty
44. Cloud Computing		
44-1	Blade Units	17
57. CPE PBL		
57.1-2	UV/vis Spectrophotometer	1
57.1-4	Atomic Absorption	1
57.1-5	Oven Furnace	1
57.1-6	Muffle Furnace	1
57.1-9	Analytical Balance	1
57.1-15	Shaking Incubator	2
57.1-16	High Speed Centrifuge	2
57.1-17	Rotary Evaporator	3
45. Physical Chemistry and Reaction Kinetics and Catalysis Lab.		
45-1	Liquid Diffusion Coefficient Apparatus	1
45-2	Chemical Reactors Apparatus	1
45-4	Three-Phase Catalytic Reactor	1
45-6	Atomic Absorption	1
45-7	Gas and Critical Point Unit	1
45-9	Mixing Enthalpy of Binary Mixtures Unit	1
45-10	Boiling Point Elevation in a Solution	1
45-12	Heat of Water Formation Unit	1
46. Chemical Process Technology Lab.-1		
46-1	Solid-Liquid Extraction Unit	1
46-2	Service Unit of Water Treatment Pilot Plant	1
46-3	Anaerobic Water Treatment Pilot Plant	1
46-4	Aerobic Water Treatment Pilot Plant	1
46-6	Coagulation, Flocculation and Settling Point Plant	1
46-10	Atomic Absorption	1
47. Corrosion & Electrochemistry Lab.		
47-1	Potentiostat Unit	1
47-2	Fuel Cell Trainer	1
47-3	Corrosion Studies Kit	2
47-4	Electrochemical Experiments system	2
48. Chemical Engineering Process Control Lab.		
48-1	Level Control Process	2
48-2	Flow Control Process	2
48-3	Pressure Control Process	2
48-4	Temperature Control Process	2
48-7	Multifunction Process Control Teaching System	1
72. Petrochemical Lab.		
72-1	Boyle's Law Trainer	2
72-2	Gay-lussac's Law Trainer	2
72-3	Oil Density Meter	2
72-4	Oil Viscosity Meter	2
72-5	Pour Point Koehler Cloud and Pour Point Bath	2
72-6	Pensky Martens Flash Point Tester	2
72-7	Sulphur Content	1
59. Unit Operation Lab.		
59-1	Batch Distillation column	1
59-2	Liq/liq Extraction Unit with Packed Column	1
59-3	Gas Absorption Column	1
59-4	Crystallization Unit	1
59-5	Sedimentation Studies Apparatus	1

Equipment List

Code No.	Equipment Name	Q'ty
59-6	Heat Transfer Pilot Plant with Shell-and-Tube and Coil Heal Exchangers	1
70. ERE PBL		
70-1	Wet Cooling Tower	2
70-6	Change of State of Gases	2
49. Renewable Energy		
49-1	Basics Renewable Energy Trainer	1
49-2	Basic Photovoltaics Unit	1
49-3	Basic Fuel Cell Technology Unit	1
49-4	Small Wind Power Plant	1
49-5	Wind Power Plant System	1
49-6	Advanced Photovoltaics System	1
49-7	Advanced Fuel Cell Technology Training System	1
50. Fuel		
50-1	Modular Test Stand for Single Cylinder Engines, 2.2kW	1
50-8	Universal Drive and Brake Unit	1
51. Thermo – Fluids		
51-1	Air Conditioning System Model	1
51-5	Ice Stores in Refrigeration	1
51-6	Capacity Control and Faults in Refrigeration Systems	1
51-7	Absorption Refrigeration System	1
51-8	Heat exchanger supply unit	1
51-13	Water Chiller for Heat Exchanger	1
51-14	Base Module for Experiments in Fluid Mechanics	1
51-22	Heat Transfer by Convection "A"	1
51-23	Thermal Radiation Unit	1
51-24	Heat Transfer by Conduction "B"	1
52. Alternative Energy		
52-1	Clean Energy Trainer	1
52-2	Fuel Cell System	1
52-3	Fuel Cell Trainer	1
52-4	Solar Hydrogen Extension	1
52-5	Principles of Solar Thermal Energy	1
52-6	Solar Module Measurements	1
Common		
00-06	Sensor system of gas detection	1

Necessary Measures borne by E-JUST for the Equipment installation
Room Type Classification for Undergraduate Engineering Laboratories

General Laboratories									
ICDN Equipment	Winds Mills (53) —Out of Scope of Supply—								
	Super Computer (54) —Out of Scope of Supply—								
	Digital Manufacturing Lab (55) —Out of Scope of Supply—								
	Nano Technology Lab (58) —Out of Scope of Supply—								
	MEMS lab (57) —Out of Scope of Supply—								
	UC lab (59) —Out of Scope of Supply—								
Hum	English Language Lab —Out of Scope of Supply—								
	Japanese Language Lab —Out of Scope of Supply—								
Basic Science	Basic Science Lab– 1 (01) RoomType 1								
	Basic Science Lab – 2 (02) RoomType 1								
	Computer Programming Lab (03) RoomType 1								
	Materials Schience lab (04) RoomType 2								
Basic Engineering	Basic Engineering Lab– 1 (05) RoomType 1								
	Basic Engineering Lab 2(Chemical, Energy, and Env. Eng.) (06) RoomType 3								
	Electronics and Circuits lab (07) RoomType 1								
	Mechanical Workshop 1 (08) Room Type 4								
	Drawing Studios (11) RoomType 1								
	Mechanical Workshop 2 (10) Room Type 4								
School	School of Innovative Design Engineering			School of Electronics, Communication and Computer Engineering			School of Energy, Environment and Chemical & Petrochemical Engineering		
Applied Engineering Total	Mechanical Vibrations Lab (13) RoomType 1			Simulation software (16) —Out of Scope of Supply—					
	Automatic Control Lab (12) RoomType 1			Data + Communications + DSP (17) >united in ECE(37)					
				Microprocessor (14) + Digital Systems (15) RoomType 1					
	Instrumentation Lab 1 (23) > united in "Basic Eng. Lab 1"								
	Instrumentation Lab 2 (24) > Deleted by united in "Basic Eng. Lab 1"								
	MONOTSUKURI Center (09) Room Type 2								
School	School of Innovative Design Engineering			School of Electronics, Communication and Computer Engineering			School of Energy, Environment and Chemical & Petrochemical Engineering		
Track*	Industrial Engineering and Management System (IME)	Mechatronics and Robotics Engineering (MTR)	Materials Science and Engineering (MSE)	Electronics and Communication Engineering (ECE)	Electrical Power Engineering (EPE)	Computer Science and Engineering (CSE)	Chemicals and Petrochemicals Engineering (CPE)	Energy Resources and Environmental Engineering (ERE)	
Track laboratories	IME PBL (100) —Out of Scope of Supply—	MTR PBL (118) —Out of Scope of Supply—	Materials Testing and characterization lab (34) RoomType 2	ECE PBL (37) RoomType 1	EPE PBL (60) RoomType 1 (+ 3P Power Source)	CSE PBL (10) RoomType 1	CPE PBL (57) (Fume Hood) RoomType 3	ERE PBL (70) RoomType 2	
	IEM Applications Lab (25) RoomType1	Sensors and actuators Lab (32) —Out of Scope of Supply—	Materials Processing Lab (35) Room Type 2	Advanced Electronics (36) RoomType1	Power Electronics (42) RoomType 1 (+ 3P Power Source)	Computing Workshop (43) RoomType 1	Physical chemistry and reaction kinetics and catalysis lab (45) (Fume Hood) RoomType 3	Renewable Energy (48) RoomType 2	
	CAD RE Lab (26) RoomType2	Biothermics and Robotics Lab (33) RoomType 1		Optical Comm (39) RoomType 1	Electrical machines lab (54) RoomType 1 (+ 3P Power Source)	Cloud Computing (44) RoomType 1	Chemical Process Technology Lab-1 (46) (Fume Hood) RoomType 3	Fuel (50) RoomType 2	
	Motion Analysis (27) —Out of Scope of Supply—			Solid State (30) RoomType 1	Switch gear and protection (55) RoomType 1 (+ 3P Power Source)		Corrosion & electrochemistry lab (47) (Fume Hood) RoomType 3	Thermo-fluids (51) RoomType 2	
	Manufacturing Lab (28) RoomType 4			RF Circuits (40) RoomType 1	Power systems analysis lab (56) RoomType 1 (+ 3P Power Source)		Chemical Engineering process control Lab (49) RoomType 3	Alternative Energy (52) RoomType 2	
	Ergonomics Lab (29) Room Type 1			Electronics (14) RoomType 1			Petrochemical lab (72) (Fume Hood) RoomType 3		
	CIM Lab (30) Room Type 1			Microwaves & Antenna (41) RoomType 1			Unit Operation lab (58) (Fume Hood) RoomType 3		
	Precision Engineering (31) RoomType 1								

N/A GA Equipman
Room Type 1
Room Type 2
Room Type 3
Room Type 4

Annex 14

Demarcation of Equipment Installation Work

Room No.1 (IT/ Electric machinery and electronics / Mechatronics)

Responsibilities for equipment side
*Carrying in and setting up equipments into the designated place (setting up on desks or floor)
*Fixing the equipments to floor face by post-constructing anchor (some equipments)
Responsibilities for facility side
*Installation of single phase outlet

Room No.2 (Basic laboratory)

Responsibilities for equipment side
*Carrying in and setting up equipments into the designated place (setting up on desks or floor)
*Fixing the equipments to floor face by post-constructing anchor (a part of equipments)
*Connecting cables to the three phase power resource switchboard (cables and related materials are prepared by equipment side)
Responsibilities for facility side
*Installation of single phase outlet
*Installation of three phase power resource switchboard (breaker capacity and its quantity should be suited to equipment specifications and quantity)
*Installation of fauset and sink

Room No.3 (Chemistry laborstory

Responsibilities for equipment side
*Carrying in and setting up equipments into the designated place (setting up on desks or floor)
*Fixing the equipments to floor face by post-constructing anchor (a part of equipments)
*Connecting exhaust duct and equipment: related to draft chamber
*Connecting signal line for operating exhaust fan and operation box (operation box is prepared by equipment side) : related todraft chamber
*Construction work for connecting plumbing pipes (joining to the pipes prepared by facility side on the floor) :related to draft chamber
*Installation of gas alarm and display on the wall (including anchor driving and drilling)
Responsibilities for facility side
*Installation of single phase outlet
*Installation of fauset and sink
*Installation of exhaust duct (based on a drawing issued by maker): Fume Hood
*Installation of exhaust duct to outside (including a hood, ceiling suspended duct, exhaust fan) : related to Atomic absorption photometer
*Installation of ethernet connection and single phase consent nearby the installation place of the body of detector

Room No.4 (Laboratory where machine tools are installed)

Responsibilities for equipment side
*Carrying in and setting up equipments into the designated place (setting up on desks or floor)
*Fixing the equipments to floor face by post-constructing anchor (a part of equipments)
*Connecting cables to the three phase power resource switchboard (cables and related materials are prepared by equipment side)
*Connecting air pipes and equipment
*Connecting welding fume exhaust ducts and ducts applied with each welding booth : related to welding booth
Responsibilities for facility side
*Constructing load resisting floor considering the equipment weight
*Installation of single phase outlet
*Installation of three phase power resource switchboard (breaker capacity and its quantity should be suited to equipment specifications and quantity)
*Installation of fauset and sink
*Installation of air resource (construction by plumbing toward equipment side with cock at the end of pipe)
*Construction of special foundation (based on a drawing submitted by manufacturer): related to forging press
*Connecting welding fume exhaust ducts and ducts applied with each welding booth : related to welding booth
*Installation of heat exhaust duct and so on: related to metal melting furnace

Categories of each laboratories and Required specifications

Room Type No.1 (IT/ Electric machinery and electronics / Mechatronics)
Fachilites needed : Power source (Single phase only)

Room Type No.2 (Basic laboratory)
Facilities needed : Power source (Single phase and three phase)
Facilities needed : Water tap and sink

Room Type No.3 (Chemistry laboratory)
Fachilites needed : Power source (Single phase only)
Facilities needed : Water tap and sink
Plumbing and exhaust duct construction upto the location specified by equipment side for installation of Fume Hoods
- Exhaust ducts from 2 Fume Hoods, which are installed in one room, are joined and raised to the rooftop.
- Exhaust fans are installed on the rooftop. The specifications must be adapted to the diameter of the duct, the difference in height, and the number of elbows on the duct route, and selected by the facility side.
- Operation control cables of the exhaust fans are laid by being cut-off at its leading end until the side wall nearby the installation place of Fume Hood.
- The end position of exhaust duct should be 300mm downward from the ceiling. No need any processing at the duct end but attach temporary sealing.
- The specification of the exhaust ducts should be "250A" and polyvinyl chloride made.
- 2 exhaust ducts are cut off and laid down from the ceiling, and non-return dampers are installed between these 2 exhaust ducts.
- Refer the annex regarding the place of the power source and plumbing system. (which requests 20A water supply and 40A drainage raising up from the floor to 100mm)

Exhaust ducts for Atomic Absorption Photometer
- Exhaust gas is exhausted to outside directly by ducts and fans from louver device on the wall or upper side of windows.
- Specifications of ducts and fans are as annex.

Gas detector
- Ethernet connection and single phase wall socket are installed close to the installation place of the body of detector where should be on the interior wall near a main entrance.
- However, through holes for laying cables from inside to outside of the room should be prepared near the main entrance.
- The through holes are used for laying cables which are for the installation of a gas alarm panel on the exterior wall at the corridor side of the main entrance. (Detailed specifications will be informed later.)
- There is no any request to the facility side regarding the body of gas detector inside the room, detector on the wall of corridor, and patrol light, because they will be installed by post-constructing anchor.

Room Type No.4 (Laboratory where machine tools are installed)
This laboratory should be located on the ground floor.
It requires the specifications such as ceiling height, wide carrying-in entrance and load-withstanding of the floor, which are suited to the specifications of intended equipments of machine tools. (Concrete floor thickness 300mm or more)
Facilities needed : Power resource (single phase and three phase)
Facilities needed : Water tap and sink
Facilities needed : Air resource (Pressure: 500kPa~700kPa, flow rate: 1000L/min. or more)
Regarding the air source, the installation of air tank at the corner of the laboratory should be considered.
Forging apparatus (08-08)
- Foundation isolation is needed. It should be apart far away from CNC machines etc. due to its vibration generation source.
- The location of this laboratory should be considered to avoid influence of vibration.

Welding booth (08-15)
- Welding fume exhaust apparatus is needed (It should be suited to 6 welding booth, the planned quantity).

Metal melting furnace (08-04, 08-05)
- The installation of funnel, duct, and fan for exhaust heat are needed due to its high heat generation resource.

Remarks for all facilities
- Votage fluctuation of power source must be within +/-10%. (Equipment side will prepare AVR individually for an equipment which has sever tolerance, such as +/-5% etc.)
- On the ventilation system to be prepared by facility side, "sand-proof" type should be employed.
- Securing the space of route and opening is requested side so that equipment can be carrying in without any trouble.
- Numbers and location of each utility should be considered depending on quantity and installation location of equipments

Notes
Above described is general classification of room type of laboratory.
Depending on the required utility of each equipment, required utility against laboratory shall be changed.
(For example, Room Type 1 + 3phase power source)

Operation and Maintenance Budget for the Project

Description	Name of Consumable	Unit Price	Q'ty annually needed	Amount
Water Purifying System	Filter	300	1	300
Trinocular Microscope	Halogen Lamp	250	10	2,500
Universal Milling Machine	Face Milling Cutter	1,500	6	9,000
Machines Lathe with Milling Unit	Face Milling Cutter	1,500	6	9,000
	Turning Tool	1,500	6	9,000
Portable MIG/TIG Welder	Torch Nozzle	60	6	360
Sanding and Polishing Machine	Polishing Cloth	200	2	400
	Polishing Paper	50	20	1,000
Basic CNC Training Center	Face Milling Cutter	3,500	1	3,500
	Turning Tool	1,500	1	1,500
Multipurpose Milling Machine	Face Milling Cutter	3,500	2	7,000
Precision Lathe	Turning Tool	1,500	2	1,500
CNC Electric Wire Discharge Machine	Processing Wire	2,000	1	2,000
Electric Wire Discharge Machine	Processing Wire	2,000	1	2,000
Semi-Automatic Miter Band Saw	Blade	1,500	1	1,500
Radial Drill Press	Drill Bit	3,500	1	3,500
CNC Universal Turning Machine	Turning Tool	1,500	1	1,500
Inverted Phase-Contrast Microscope	Halogen Lamp	250	1	250
Stereo Microscope	Halogen Lamp	250	1	250
System Microscope	Halogen Lamp	250	1	250
Scanning Electron Microscope	Filament	3,000	1	3,000
Rockwell Hardness Tester	Hardness Standard Block	1,000	2	2,000
Vickers Hardness Tester	Hardness Standard Block	2,500	2	5,000

Benchtop XRD	Sample holder	20	100	2,000
Upright Microscope	Halogen Lamp	250	2	500
Stereoscope	Halogen Lamp	250	2	500
Mechanical Polishing Machine	Polishing Cloth	200	3	600
	Polishing Paper	50	30	1,500
Cutting Machine	Blade	1,500	2	3,000
Titrations Experiment (5models)	Regents	700	10	7,000
Electrochemical Process Experimentals	Reagents	700	10	7,000
UV/vis Spectrophotometer	Reagents	700	6	4,200
Atomic Absorption	Reagents	1,500	6	9,000
Chemical Reactors Apparatus	Reagents	2,000	1	2,000
Solid-Liquid Extraction Unit	Reagents	3,500	1	3,500
Service Unit of Water Treatment Pilot Plant	Reagents	2,000	1	2,000
	Total			109,110

TECHNICAL NOTES

THE PREPARATORY SURVEY
ON THE PROJECT
FOR PROCUREMENT OF EDUCATION AND RESEARCH EQUIPMENT
FOR EGYPT-JAPAN UNIVERSITY OF SCIENCE AND TECHNOLOGY
PHASE 1

Since the equipment planned for the Project for Procurement of Education and Research Equipment for Egypt-Japan University of Science and Technology (hereinafter referred to as "the Project") will be installed in laboratories of new campus buildings which will be constructed by the Egyptian side, the adjustment between facility planning and equipment planning shall be essential to materialize appropriate and functional laboratories. During this survey, Egypt-Japan University of Science and Technology (hereinafter referred to as "E-JUST") together with Isozaki, Aoki & Associates (hereinafter referred to as "IAA"), which conducts the designing of the new campus buildings, and the Preparatory Survey Team (hereinafter referred to as "the Team") had discussions on this matter and confirmed on the contents of the facility drawings and equipment specifications.

Based on the confirmation, the Team submitted the remarks on the drawings item by item for the Project in terms of realizing the adequate installation in laboratories of the new campus buildings. E-JUST/IAA has agreed to reflect the remarks submitted by the Team into the facility drawings as much as possible.

Cairo, March 31st 2016

Mr. Ryoji Okamoto
Equipment Planner
Preparatory Survey Team
Japan

Prof. Ahmed El-Gohary
President
Egypt-Japan University of Science and Technology
Arab Republic of Egypt

March 31, 2016

THE PROJECT FOR PROCUREMENT OF EDUCATION AND RESEARCH EQUIPMENT FOR EGYPT-JAPAN UNIVERSITY OF SCIENCE AND TECHNOLOGY

Proposal to E-JUST for Grant Aid Phase1(GA1) Equipment Installation

Note on Remarks ;
heavy : equipment weighing 100kg or more
size : one dimension of equipment is 1.5 m or larger
space : large equipment requiring cosideration for layout
other budget + x : Total Q'ty is GA1 + GA2 + x(by other budget source), but excluding existing Q'ty
included in xx-x : this item is considered as a component of main unit which shall be included in main body spec.
Q'ty x : error in Q'ty found in the drawings, x is correct Q'ty.
wrong description : wrong equipment name
ventilation : equipment requiring ventilation system for its generating fume, gas, heat etc.
others : INTEM points out special cares required for equipment installation.

GA1				Remarks(INTEM)
Lab No. Code No.	Equipment Name	Q'ty	Check on IAA DD Drawings	Result from IAA DD Drawings and Special Cares for Equipment Installation
Building A				
【GF】				
ECE 40. RF Circuits				
40-4	RF Cable for Vector Signal Generator	1	√	
40-16	DC Power Supply	4	√	
40-17	Function Generator	4	√	
40-18	Digital Multimeter	4	√	
40-19	Digital Storage Oscilloscope	4	√	
40-20	AM Transceiver	4	√	
40-21	RF System Design Kit	4	√	
40-22	FM Transceiver	4	√	
ECE 39. Solid State				heavy
39-1	Electronics Demonstration System A	7	√	heavy, other budget +5
~~39-2~~	~~Electronics Demonstration System B~~	~~7~~	√	included in 39-1
ECE (15+18) Microprocessor & Digital Systems				equipment installed in which room No.15 or No.18?
15+18-2	Electrical Measurement Instrument Set	8	√	
15+18-3	Digital Systems Kit	8	√	
15+18-4	Microprocessors and Microcontroller kit	8	√	
15+18-5	Digital Pattern Generator	2	√	
15+18-6	Logic Analyzer	2	√	
15+18-7	Embedded Vision Starter Kit	8	√	
15+18-8	Development Board	8	√	
15+18-9	Respberry pi kit	8	√	
15+18-10	Arduino kit	8	√	
15+18-11	Development kit	8	√	
ECE 36. Advanced Electronics				
36-1	Operational Amplifier Circuit Trainer	12	√	
~~36-2~~	~~Electronics Demonstration System~~	~~12~~	√	included in 36-1
36-3	Function Generator	12	√	
36-4	Digital Multimeter	12	√	
36-5	Digital Storage Oscilloscope	12	√	
36-6	DC Power Supply	12	√	
ECE 41. Microwaves & Antenna				
41-1	Antenna Training and Measuring System "A"	1	√	
41-2	Antenna Training and Measuring System "B"	1	√	
41-4	Vector Network Analyzer	1	√	
41-5	Calibration Kit for Vector Network Analyzer	1	√	
41-6	Adapter "A" for Vector Network Analyzer	4	√	
41-7	Adapter "B" for Vector Network Analyzer	4	√	
41-8	Adapter "C" for Vector Network Analyzer	4	√	
41-9	Adapter "D" for Vector Network Analyzer	4	√	
41-10	Adapter "E" for Vector Network Analyzer	4	√	
41-11	Adapter "F" for Vector Network Analyzer	4	√	
41-12	RF cable "A" for Vector Network Analyzer	2	√	
41-13	RF cable "B" for Vector Network Analyzer	2	√	
41-14	RF cable "C" for Vector Network Analyzer	2	√	
41-15	Circular Polarized Antennas	1	√	
41-16	Horn Antenna	1	√	
EPE 94. Electrical Machines Lab.				

Lab No. Code No.	GA1 Equipment Name	Q'ty	Check on IAA DD Drawings	Remarks(INTEM) Result from IAA DD Drawings and Special Cares for Equipment Installation
94-5	Basics Interface Unit	14	✓	3 phase power source with plug
94-6	Basics of DC Machines	2	✓	
94-7	Asynchronous Machines	2	✓	included in 94-5
94-8	Synchronous Motors and Generators	2	✓	〃
94-9	Stepper Motors	2	✓	〃
94-10	Linear Motors	2	✓	〃
94-11	BLDC/Servo Motors	2	✓	〃
94-12	Three-Phase Transformers	2	✓	〃
94-13	DC Machines 300W	2	✓	
94-14	Three-Phase Motor with Slip-Rings	2	✓	
94-15	Synchronous Machines 300W	2	✓	
EPE 96. Power Systems Analysis Lab.				
96-1	Manually operated synchronizing circuits	1	✓	
96-2	Automatic synchronizing circuits, automatic power control and automatic power factor control	1	✓	
96-3	Investigations on Three-phase Transmission Lines	1	✓	
96-4	Combined networks of cables and lines	1		consisting of 3 components, other budget +2
96-5	Directional overcurrent time protection for lines	1	✓	
96-6	Busbar systems	1	✓	
96-7	Complex loads, power consumption measurement and peak load monitoring	1	✓	
96-8	Dynamic loads	1	✓	
CSE 43. Computing Workshop				
43-1	Laser Rangefinder	4	✓	
43-2	Data acquisition cards	4	✓	
43-3	Cameras for Windows	5	✓	
43-4	Illumination Sensors	4	✓	
43-5	IP Camera "A"	4	✓	
43-6	IP Camera "B"	4	✓	
43-7	GPS Sensor	4	✓	
43-8	Pressure sensor	4	✓	
43-9	Ultrasonic Sensor	4	✓	
43-10	Ultrasonic Distance Sensor	4	✓	
43-11	Khe3Base Kit with Board	2		Q'ty 2
43-12	Laser Range Finders with LRF Module	2	✓	
43-13	RC Programmable Helicopters	10	✓	
43-14	Laptop Computer MAC-Based	10	✓	
43-15	Laptop Computer Windows-Based	10	✓	
43-16	Tablet MAC-Based	10	✓	
43-17	Tablet Android-based	10	✓	
43-18	Light Field Camera	2	✓	
43-19	Camcorder	1	✓	
43-20	Digital Camera SLR	1	✓	
43-21	Robot "A"	10	✓	
43-22	Robotic Ball "A"	10	✓	
43-23	Robotic Ball "B"	10	✓	
43-24	Robot "B"	10	✓	
43-25	Surface Computer	3	✓	
43-26	3D Printer	5	✓	
【1F】				
ECE 38. Optical Communication Lab				
38-1	Fiber Optics Educational Kit	3	✓	
38-2	Fiber Cleaver	3	✓	
38-3	Scientific Grade Optical Breadboard	6	✓	included in 38-1
38-4	Single Mode Fiber Optics "A"	3	✓	〃
38-5	Single Mode Fiber Optics "B"	2	✓	〃
38-6	DC Power Supply	3	✓	
38-7	OptiSystem Perpetual Software "A"	1	✓	
37. ECE PBL				
37-1	Computer Interface Base Unit	6	✓	
37-10	Android Mobile A	3	✓	
37-13	Instrumentation Package	6	✓	
37-14	Rraspberry PI processor	12	✓	
37-15	DSP Starter Kit A	6	✓	
37-16	DSP Starter Kit B	6	✓	
37-17	Spectrum Analyzer	1		Q'ty 1
37-18	Android Tablet A	3		Q'ty 3
37-19	Android Tablet B	3		Q'ty 3

Lab No. Code No.	GA1 Equipment Name	Q'ty	Check on IAA DD Drawings	Remarks(INTEM) Result from IAA DD Drawings and Special Cares for Equipment Installation
37-22	Android Mobile B	3		Q'ty 3
ECE 14. Electronics				
14-1	Basic Electronics lab	12	✓	consisting of set 1 & set 2, 12 ea.
EPE 42. Power Electronics				
42-1	Basics Interface Unit	8	✓	3 phase power source with plug
42-2	Line-Commutated Power Converters, 3-Phase	2	✓	
~~42-3~~	~~Self-Commutated Power Converters~~	~~2~~	✓	included in 42-2
42-4	Frequency Converter Drives	2	✓	
~~42-5~~	~~Active Power Factor Correction Unit~~	~~2~~	✓	included in 42-4
42-6	Line Commutated Converter Circuits 300W	2	✓	
42-7	Self-commutated converter circuits 300W	2	✓	
42-8	Field-oriented control of asynchronous machine with Matlab - Simulink 1kW	2	✓	
98. EPE PBL				
98-1	Basics Interface Unit	8	✓	3 phase power source with plug
98-2	Three-Phase Technology Unit	2	✓	
98-3	Magnetism / Electromagnetism Unit	2	✓	
98-4	Photovoltaics Unit	2	✓	
98-5	Transient Processes in AC and DC Networks	2	✓	
EPE 95. Switch Gear and Protection				heavy
95-1	Investigations on Three-Phase Transmission Lines	2	✓	3 phase power source with plug
95-2	Directional Overcurrent Time Protection for Lines	1	✓	
~~95-3~~	~~Overvoltage and Under-voltage Protection~~	~~4~~	✓	included in 95-2
~~95-4~~	~~Earth Fault Protection~~	~~1~~	✓	〃
95-5	Power Protection	1	✓	
95-6	Motor Management Relays	1	✓	
~~95-7~~	~~Contactor Circuits in Three-Phase Systems 230V~~	~~1~~	✓	included in 95-6

Building B				
[GF]				
IME 31. Precision Engineering				
31-1	Measuring Tool Kit	8	✓	
31-2	External Digital Micrometer	8	✓	
31-3	Depth Micrometer	8	✓	
31-4	Digital Vernier Caliper	8	✓	
31-5	Gauge Blocks Sets	8	✓	
31-6	Magnetic Measuring Stand	4	✓	
31-7	V- Blocks	10	✓	
31-8	Thread Gauge	4	✓	
31-10	Comparators Stand	10	✓	
31-11	Dial Gauge (English and Metric)	8	✓	
31-12	Horizontal Leveling Instrument	6	✓	
31-13	Square Leveling Instrument	6	✓	
31-14	Digital Protractor	8	✓	
31-15	Vernier Protractor	8	✓	
31-16	Thread Gauge	4	✓	
31-17	Height Digital Gauge	6	✓	
31-18	Thread Gauge	4	✓	
31-19	Surface Plate	1	✓	
31-20	Small Surface Plate	8	✓	
31-22	Tool Makers Microscope	1	✓	
31-23	Thread Testing Machine	3	✓	
31-25	Profile Projector	1	✓	
31-26	Inside Micrometer Set "A"	6	✓	
31-27	Inside Micrometer Set "B"	6	✓	
31-28	Bench Center	2	✓	
31-29	Micrometer Stands	10	✓	
31-31	Depth Micrometer 0-100 mm	8	✓	
31-32	Internal Micrometer 5-30 mm	8	✓	
31-33	Vernier Caliper 1/50	8	✓	
31-34	Vernier Caliper 1/20	8	✓	
31-35	High Resolution Projector	1	✓	
IME 28. Manufacturing Lab.				metal processing system, heavy
28-79	Master CNC Training Center including CNC Lathe and Vertical Machining Center	1	✓	space(consisting of 2 individual machines), size, heavy
IME 30. CIM Lab.				
30-1	Flexible Manufacturing System	1	✓	size (pedestal or platform required), heavy

	GA1			Remarks(INTEM)
Lab No. Code No.	Equipment Name	Q'ty	Check on IAA DD Drawings	Result from IAA DD Drawings and Special Cares for Equipment Installation
30-2	✓ Interactive Whiteboard System	1	✓	wall hanging
30-4	RFID Training Kit	4	✓	
30-5	RFID Development Lab Kit	4	✓	
IME 26. CAD RE Lab				
26-1	PC + Monitor	20	✓	layout considering LAN
26-2	Graphics Touch Tablets	21	✓	
26-3	✓ Interactive Whiteboard System	1	✓	wall hanging
26-4	3D printer A	1	✓	
26-5	3D printer B	10	✓	
26-6	A0 Plotter	1	✓	size, heavy
26-7	Application Server	1	✓	
26-11	Graphics Editing Touch Tablets	1	✓	
26-13	Desktop 3D Scanner	11		No quantity
26-14	Portable Articulated Arm CMM	1		Q'ty 1
26-15	Instructor Graphics Workstation	1	✓	
26-16	High Resolution Projector	2	✓	
26-21	CO2 laser cutting systems	1	✓	Fume, debris treatment
26-22	Mechanics Lathe	1	✓	size, heavy
26-24	Drill Press/Milling Machine	1	✓	size, heavy
MTE&IME 12. Automatic Control Lab.				M-R → MTE
12-1	Analog and Digital DC Servo System	2	✓	
12-2	Magnetic Levitation System	2	✓	
12-3	Digital Pendulum	2	✓	
12-4	Coupled Tanks System	2	✓	
12-5	Level/Flow Process Control	2	✓	
~~12-6~~	~~Temperature Process Control~~	~~2~~	✓	included in 12-5
~~12-7~~	~~Pressure Process Control~~	~~2~~	✓	〃
12-8	Ball & Beam Apparatus	2	✓	
12-10	Allen Bradley PLC Trainer	1	✓	
12-11	Siemens PLC Trainer	1	✓	
MTE&IME 13. Mechanical Vibrations Lab.				heavy
13-1	Universal Vibration Apparatus	2	✓	heavy
~~13-2~~	~~Vibration Sensor with Clamping Set~~	~~2~~	✓	included in 13-1
13-3	Whirling of Shafts Apparatus	2	✓	
13-4	Dynamic Balancing Machine	2	✓	
13-5	Impact Test Hammer	2	✓	
13-6	Machinery Diagnostic System	2	✓	
13-7	Computerized Vibration Analyzer	2	✓	
MTE 33. Mechatronics and Robotics Lab.				
33-1	Robot Arm	3	✓	
33-2	Aerial Vehicle	2	✓	
33-3	Humanoid Robot Kit	4	✓	
33-4	Universal Mechanism Kit	2	✓	space
33-5	Pneumatics and Electro-Pneumatics System	1	✓	space
33-6	DC Transport System Workstation	1	✓	space
33-7	AC Transport System Workstation	1	✓	space
33-8	Sorting Station	1	✓	space
33-9	Assembly Station	1	✓	space
33-10	Processing Station	1	✓	space
33-11	Testing Station	1	✓	space
33-12	Handling Station	1	✓	space
33-13	Storage Station	1	✓	space
33-14	Routing Station	1	✓	space
33-15	Buffering Station	1	✓	space
33-16	Disassembly by Robot Station	1	✓	space
33-17	Production Line with 3/4 Subsystems	1	✓	space
33-18	Robot Technology for Mechatronics Applications	1	✓	space
33-19	Assembly Technology Training Set	1	✓	
33-20	IMS Sensor Case	1	✓	
33-21	IMS Virtual Package	1	✓	
33-22	Robot Modules	12		wrong description
MSE 34. Materials Testing and Characterization Lab.				heavy
34-1	Rockwell Hardness Tester	1	✓	rack
34-2	Vickers Hardness Tester	1	✓	rack
34-3	Friction and Wear Testing Machine	1	✓	heavy
34-4	Universal Material Tester	1	✓	
34-5	Ultrasonic Flaw Detector	3	✓	
34-6	Benchtop XRD	1	✓	grounding resistance 100ohm or less

	GA1			Remarks(INTEM)
Lab No. Code No.	Equipment Name	Q'ty	Check on IAA DD Drawings	Result from IAA DD Drawings and Special Cares for Equipment Installation
34-7	Upright Microscope	2	✓	
34-9	Stereoscope	4	✓	
34-12	Viscometer	2	✓	
34-13	UV/ Vis Spectrophotometer	1	✓	
34-14	FT-IR Spectrometer	1	✓	

	GA1			Remarks(INTEM)
Lab No. Code No.	Equipment Name	Q'ty	Check on IAA DD Drawings	Result from IAA DD Drawings and Special Cares for Equipment Installation
34-16	Four(or two) Point Probe	1	✓	
34-17	Mechanical Polishing Machine	3	✓	
34-18	Compression Mounting	1	✓	
34-19	Balances	5	✓	
34-21	Creep Testing Machine	2	✓	
【1F】				
25. IME Applications Lab				
25-1	PC + Monitor	20	✓	
25-10	Applications server	1	✓	
25-19	Intelligent Lectern	1	✓	heavy
25-20	A0 plotter	1	✓	size, heavy
25-21	Instructor Graphics Workstation	1	✓	
25-22	high resolution projector	2	✓	
25-23	Graphics Editing touch tablets	1	✓	
IME 29. Ergonomics Lab.				
29-1	Biomedical Measuring System	2	✓	
29-2	Precise Anthropometric Measuring Tools	3	✓	
29-3	High Pull Force Equipment	3	✓	
29-4	Ergonomic Assessment Tools	3		no description
29-5	Precise Anthropometric Measuring Tools	3	✓	
29-6	Goniometer Set	3		Q'ty 3
29-7	Whole Body Vibration Exposure Assessment	2	✓	
29-8	Heavy Duty Vibration Meter	3	✓	
29-9	Eye Movement Recorder	1		other budget +1
29-10	Advanced Ergonomics Testing Kit and software	3	✓	
29-11	Physical Work and Function Capacity Evaluation System	2	✓	
29-12	Occupational Skills Assessment Test Battery	3	✓	
29-13	Electronic Fitness Cycle	2	✓	
29-14	Reaction and Movement Time Panel with Psymcon Control	3		same equipment in the drawing 29, total 5 ?
29-15	High Speed Digital Camcorder	2		no description
29-16	Portable Sound and Vibration Analyzer	2		Q'ty 2
29-17	Personal Vibration Monitor	3	✓	
29-18	Whole-Body Vibration Dosimeter and Analyzer	3	✓	
29-19	Handheld Weather Station	3		no description
29-21	Flicker Value Measurement Instrument	3	✓	
29-22	Infrared Thermometer	3	✓	
29-23	Lux-Meter	3	✓	
MSE 35. Materials Processing Lab.				heavy
35-1	Ball Milling	2	✓	
35-2	Mixer	1	✓	
35-3	Thieves	2		other budget +1
35-4	Hydraulic Presses	1		other budget +2
35-5	Induction Furnace (100gm)	3		heavy, ventilation, other budget +2
35-6	Potentiostate and Galvanostate	1	✓	
35-7	Refrigerator and Freezer	1		Q'ty 1
35-8	Electric Balance	5		Q'ty 5
35-9	Muffle Furnace	3	✓	
35-10-1	Rolling Machine A	1	✓	heavy
35-10-2	Rolling Machine B	2	✓	heavy
35-11	Cutting Machine	2	✓	heavy
35-12	Impact Testing Machine	1	✓	
35-13	Vacuum Tube Furnace	2	✓	
35-14	Dry Oven	2	✓	
35-15	Hot Plate	5	✓	
35-16	Ice Making Machine	1	✓	
35-17	Double Water Distiller	2	✓	
35-18	Automatic Potential Titrotor	2		other budget +8
35-19	Heated Ultrasonic Cleaner	3	✓	placed nearby sink
35-20	Homogenizer	2		other budget +1
35-21	Centrifuge	3	✓	
35-23	Hydraulic Lamination Hot Press	1		other budget +1
35-25	Single Screw Extruder for Lab.	1	✓	heavy

Lab No. Code No.	GA1 Equipment Name	Q'ty	Check on IAA DD Drawings	Remarks(INTEM) Result from IAA DD Drawings and Special Cares for Equipment Installation
Building C				
【GF】				
CPE 48. Chemical Engineering Process Control				chemical system
48-1	Level Control Process	2	✓	
48-2	Flow Control Process	2	✓	
48-3	Pressure Control Process	2	✓	
48-4	Temperature Control Process	2	✓	
48-7	Multifunction Process Control Teaching System	1	✓	
CPE 46. Chemical Process Technology Lab				chemical system, heavy
46-1	Solid-Liquid Extraction Unit	1		size, heavy, tap water: 150l/h at 2 bar compressed air: 10Nm3/h at 6 bar(valve with connection of 1/4 "F, Q'ty 1
46-2	Service Unit of Water Treatment Pilot Plant	1		tap water, drain, Q'ty 1
46-3	Anaerobic Water Treatment Pilot Plant	1		tap water, drain, Q'ty 1
46-4	Aerobic Water Treatment Pilot Plant	1		tap water, drain, Q'ty 1
46-6	Coagulation, Flocculation and Settling Point Plant	1	✓	size, heavy, tap water, drain
46-10	Atomic Absorption	1	✓	ventilation
CPE 59. Unit Operation Lab.				chemical system
59-1	Batch Distillation column	1	✓	cold water supply: 15 L/min at 2 bar press (min)
59-2	Liq/liq Extraction Unit with Packed Column	1	✓	
59-3	Gas Absorption Column	1	✓	water supply: 10 L/min at 1 bar press (min)
59-4	Crystallization Unit	1	✓	
59-5	Sedimentation Studies Apparatus	1	✓	
59-6	Heat Transfer Pilot Plant with Shell-and-Tube and Coil Heat Exchangers	1	✓	
CPE 72. Petrochemical Lab.				chemical system
72-1	Boyle's Law Trainer	2	✓	
72-2	Gay-lussac's Law Trainer	2	✓	
72-3	Oil Density Meter	2	✓	
72-4	Oil Viscosity Meter	2	✓	
72-5	Pour Point Koehler Cloud and Pour Point Bath	2	✓	
72-6	Pensky Martens Flash Point Tester	2	✓	
72-7	Sulphur Content	1	✓	
ERE 51. Thermo - Fluids				heavy
51-1	Air Conditioning System Model	1	✓	size, heavy
51-5	Ice Stores In Refrigeration	1	✓	size, heavy
51-6	Capacity Control and Faults in Refrigeration Systems	1	✓	size, heavy
51-7	Absorption Refrigeration System	1	✓	
51-8	Heat exchanger supply unit	1	✓	
51-13	Water Chiller for Heat Exchanger	1	✓	
51-14	Base Module for Experiments in Fluid Mechanics	1	✓	
51-22	Heat Transfer by Convection "A"	1	✓	
51-23	Thermal Radiation Unit	1	✓	
51-24	Heat Transfer by Conduction "B"	1		
ERE 50. Fuel				heavy
50-1	Modular Test Stand for Single Cylinder Engines, 2.2kW	1		heavy, other budget +1, duct material SUS304 size A50. positioning height of duct end indoor : About 1m from FL. on the wall positioning height of duct end outdoor : More than 2m from GL.
50-8	Universal Drive and Brake Unit	1		heavy, other budget +1
【1F】				
CPE 47. Corrosion & Electrochemistry Lab.				chemical system
47-1	Potentiostat Unit	1		other budget +1
47-2	Fuel Cell Trainer	1		other budget +1, Hydrogen storage cylinder required
47-3	Corrosion Studies Kit	2	✓	nitrogen gas required
47-4	Electrochemical Experiments system	2	✓	
CPE 45. Physical Chemistry and Reaction Kinetics and Catalysis Lab.				chemical system, heavy
45-1	Liquid Diffusion Coefficient Apparatus	1	✓	
45-2	Chemical Reactors Apparatus	1	✓	
45-4	Three-Phase Catalytic Reactor	1	✓	hydrogen cylinder
45-6	Atomic Absorption	1	✓	ventilation
45-7	Gas and Critical Point Unit	1	✓	mini compressor using ethane gas
45-9	Mixing Enthalpy of Binary Mixtures Unit	1	✓	acetone gas
45-10	Boiling Point Elevation in a Solution	1	✓	
45-12	Heat of Water Formation Unit	1	✓	

Lab No. Code No.	GA1 Equipment Name	Q'ty	Check on IAA DD Drawings	Remarks(INTEM) Result from IAA DD Drawings and Special Cares for Equipment Installation
57. CPE PBL				chemical system, heavy
57.1-2	UV/Vis Spectrophotometer	1		other budget +1
57.1-4	Atomic Absorption	1	✓	ventilation, C2H2 by Gas Cylinder
57.1-5	Oven Furnace	1	✓	ventilation
57.1-6	Muffle Furnace	1	✓	ventilation
57.1-9	Analytical Balance	1	✓	
57.1-15	Shaking Incubator	2	✓	
57.1-16	High Speed Centrifuge	2	✓	
57.1-17	Rotary Evaporator	3	✓	
70. ERE PBL				heavy
70-1	Wet Cooling Tower	2		heavy, other budget +1
70-6	Change of State of Gases	2	✓	
ERE 52. Alternative Energy + 49. Renewable Energy				
	52. Alternative Energy			
52-1	Clean Energy Trainer	1		other budget +1
52-2	Fuel Cell System	1	✓	
52-3	Fuel Cell Trainer	1		other budget +1
52-4	Solar Hydrogen Extension	1	✓	
52-5	Principles of Solar Thermal Energy	1	✓	
52-6	Solar Module Measurements	1	✓	space, heavy
52-7	Photovoltaic in Grid-connected Operation	1		accessory of 52-6
52-8	Stand Alone Operation of Photovoltaic Modules	1		〃
52-9	Domestic Water Heating with Flat Collector	1		〃
52-10	Artificial Light Source	1		〃
	49. Renewable Energy			
49-1	Basics Renewable Energy Trainer	1	✓	
49-2	Basic Photovoltaics Unit	1	✓	
49-3	Basic Fuel Cell Technology Unit	1	✓	
49-4	Small Wind Power Plant	1	✓	
49-5	Wind Power Plant System	1	✓	
49-6	Advanced Photovoltaics System	1	✓	
49-7	Advanced Fuel Cell Technology Training System	1	✓	

Building E (COE)				
【GF】				
IME 08. Mechanical Workshop 1				metal processing system, heavy, anti-vibration, isolated slab
08-1	Universal Grinding Machine	3	✓	size, heavy, air supply(1000MPa 1000L/min.), kept away from 08-6 Foring press
08-2	Hydraulic Press	1	✓	size, heavy
08-3	Universal Milling Machine	6	✓	size, heavy, air supply(1000MPa 1000L/min.)
08-4	Centrifugal Casting Set	3	✓	
08-5	Forging Induction Furnace	2	✓	heavy, consisting of generator and transformer, high-temp(ventilation)
08-6	Forging Press	2	✓	special concrete foundation(2m x 3m x 0.5m depth, isolated slab)
08-7	Mechanics Lathe with Milling Unit	6	✓	size, heavy, high-temp(ventilation), air supply(1000MPa
08-8	Sand Casting Kit	10	✓	
08-9	Bell Casting Set	6	✓	
08-10	Lathe	6	✓	heavy, air supply(700MPa 1000L/min.)
08-11	Foundry Sand Mixing Unit	3	✓	heavy
08-12	Portable MIG/TIG Welder	6	✓	
08-13	Bench Mounted Column Drill	3	✓	heavy, air supply(700MPa 1000L/min.)
08-14	Column Drill	3	✓	heavy, air supply(700MPa 1000L/min.)
08-15	Welding Booth	6	✓	size, heavy
08-16	Spot Welding Unit with Arm Set	6	✓	mobile fume collector attached
08-17	Manual Hydraulic Workshop Press	6	✓	
08-18	Arbor Press	3	✓	heavy
08-19	Manual Arc Welding Station	6	✓	heavy, nearby welding booth
08-20	Melting Furnace for Light Metal	2	✓	heavy, high-temp(ventilation)
08-21	Universal Bender	3	✓	
08-22	Sheet Metal Forming Combination Machine	3	✓	
08-23	Hydraulic Tube Bender	3	✓	
08-24	Portable Oxyacetylene Welding Unit	6	✓	nearby welding booth
08-25	Angle Iron Bender	3	✓	
08-26	Analog Measuring Tool Set	12	✓	
08-39	Conventional Cylindrical Grinding Machine	1	✓	size, heavy, air supply(1000MPa 1000L/min.), kept away from 08-6 Foring press

GA1				Remarks(INTEM)
Lab No. Code No.	Equipment Name	Q'ty	Check on IAA DD Drawings	Result from IAA DD Drawings and Special Cares for Equipment Installation
08-40	Universal Tool Grinding Machine	2	✓	size, heavy, air supply(1000MPa 1000L/min.), kept away from 08-6 Foring press
08-41	Dual Pedestal Grinder	3	✓	
08-42	Semi-Automatic Miter Band Saw	1	✓	size, heavy, air supply(1000MPa 1000L/min.), GA1 Q'ty 1
08-43	Hydraulic Surface Grinder	1	✓	size, heavy, anti-vibration, kept away from 08-6 Forging press, Tolerable vibration : 0.3micro-meter or less / 30-300Hz, air supply required, air supply(1000MPa
08-44	Sanding and Polishing Machine	2	✓	heavy, ventilation
IME 10. Mechanical Workshop 2				metal processing system, heavy
10-2	Laser Cutting System	1		size, heavy, ventilation, air supply(1200MPa 1000L/min.), GA1 Q'ty 1
10-4	Surface Metrology and Form Measurement System	1	✓	vibration proof
10-5	Basic CNC Training Center	1	✓	space(consisiting 2 machines and PC system), air supply(1000MPa 1000L/min.)
10-6	Water-Jet Cutting System	1	✓	size, heavy, air supply(1000MPa 1000L/min.)
10-8	Hydraulic Surface Grinder	1	✓	size, heavy, anti-vibration,(Allowance of vibration: 0.3micro-meter or less / 30-300Hz), air supply(700MPa 1000L/min.), water supply and
10-9	Multipurpose Milling Machine	2	✓	size, heavy, air supply(0.5Mpa or more)
10-10	Precision Lathe	2	✓	size, heavy, air supply(700MPa 1000L/min.)
10-11	CNC Electric Wire Discharge Machine	1	✓	size, heavy, air supply(1000MPa 1000L/min.)
10-12	Electric Discharge Machine	1	✓	size, heavy, air supply(1000MPa 1000L/min.)
10-13	Semi-Automatic Miter Band Saw	1	✓	size, heavy, air supply(700MPa 1000L/min.),
10-15	Drill Press	1	✓	size, heavy, air supply(700MPa 1000L/min.),
10-16	Column Drill	2	✓	size, heavy, air supply(700MPa 1000L/min.),
10-17	Electronic Hardness Tester	1		wrong description, Universal Tool Grinding Machine
10-18	Universal Tool Grinding Machine	1	✓	size, heavy, air supply(700MPa 1000L/min.),
10-25	Radial Drill Press	1	✓	size, heavy, air supply(700MPa 1000L/min.)
10-52	CNC Universal Turning Machine	1	✓	size, heavy, anti-vibration(allowance of vibration :~ 4.9m/s2), foundation drawing shall be provided, air supply(700MPa 1000L/min.)
10-53	Hardness Tester	1	✓	
10-54	Sandling and Polishing Machine	1	✓	heavy
06. Basic Engineering Lab. 2				chemical system, heavy
06-1	Titrations Experiment (5 models)	10	✓	
06-2	Electrochemical Process Experimental	10	✓	
06-3	Fuel Cell Trainer	1	✓	
06-4	UV/vis Spectrophotometer	3	✓	
06-5	Chemical Process Industrial System	10	✓	gas and cylinder
06-6	Clean Energy Trainer	3	✓	
06-7	Atomic Absorption	2	✓	ventilation
06-8	Thermal Conductivity of Building Materials	5	✓	
06-9	Gas/Liquid Heat Conduction Trainer	5	✓	
06-10	Temperature Measurement Trainer	5	✓	
06-11	Pressure Measurement Trainer	5	✓	
06-12	Convection and Radiation	5	✓	size, heavy
06-13	Steam Distillation Unit	1	✓	
06-14	Autoclave	3	✓	
06-15	Laboratory Furnace	2	✓	
06-16	UV Water Purification System	2	✓	
Basic Science Lab 1 (Chemistry)				
01-1	Electro analytical scale	14	✓	
01-3	Water purifying system	1	✓	
01-4	Ice Maker	1	✓	
01-5	pH Meter	27	✓	
01-7	Digital Multimeter	27	✓	
01-8	DC Power Supply	27	✓	
01-9	Absorption Spectrophotometer	14	✓	
01-10	Constant-temperature Bath	27	✓	
01-11	Micro melting point apparatus	14		wrong description, Micro melting point apparatus
01-12	Heating Block	27	✓	
01-13	Polarimeter	14	✓	
01-14	Centrifuge	7	✓	
01-15	Quantum Chemical Simulation Software	27	✓	
01-16	Magnetic Stirrer	27	✓	

Lab No. Code No.	GA1 Equipment Name	Q'ty	Check on IAA DD Drawings	Remarks(INTEM) Result from IAA DD Drawings and Special Cares for Equipment Installation
01-17	UV Light Source	27	✓	
IME 09. MONOTSUKURI Center				
09-1	Digital Oscilloscope	2	✓	
09-2	Digital Multimeter	2	✓	
09-4	Regulated Power Supply A	2	✓	
09-5	Regulated Power Supply B	1	✓	
09-6	Inverted phase-contrast microscope	1	✓	
09-7	Stereo Microscope	1	✓	
09-8	System Microscope	1	✓	
09-9	Scanning Electron Microscope	1	✓	
09-10	Water Purifier for Highly Purified Distilled Water	1	✓	
09-12	Helium Leak Detector	1	✓	
09-14	Fused Deposition Modeling 3D Printer	1	✓	
09-15	Stereo lithography 3D Printer	1	✓	
09-16	CNC Desktop Milling Machine	1	✓	
09-17	Cutting Plotter	1	✓	
CSE 03. Computer Programming. Lab.				
03-6	Interactive Whiteboard System	1	✓	size, heavy, anchoring work shall be done by an equipment supplier
03-7	High Definition Projector	2	✓	
03-13	Intelligent Lectern	1	✓	
05. Basic Engineering Lab. 1			✓	layout considering LAN
05-10	Desktop PC and monitor	14	✓	
05-11	Electrical Measurement Instrument Set	14	✓	
05-12	Electrical Circuits Kit	14		missing in the drawing
05-13	PCB CNC machines	1	✓	air supply(0.6MPa 100L/min.), ventilation,
05-14	Data Acquisition Systems	14	✓	
05-15	Electronic Counters	14	✓	
MSE 04. Materials Science Lab.				heavy
04-1	Tensile Testing Machine	5	✓	
04-5	Thermal Expansion Trainer	5		heavy, other budget +5
04-6	Thermal Conductivity Trainer	5	✓	heavy
04-7	Resistivity and Band Gap Measurements	10	✓	
04-8	Magnetism Measurement	10	✓	
04-10	Trinocular Microscope	5		heavy, other budget +5
04-11	Data Acquisition Using LabVIEW	10	✓	
04-12	Rockwell Hardness Tester	5		heavy, other budget +5
04-13	Viscometer	10	✓	
04-15	Vernier Caliper	20	✓	
04-16	Micrometer	20	✓	
04-17	Electric Balance	5	✓	
04-18	Thermocouple	15	✓	
(MF)				
02. Basic Science Lab. - 2				
02-2	Universal Interface	14	✓	
02-3	Data Acquisition Software	1	✓	
02-4	Combined Gas Law Kit	14	✓	
02-5	2-Axis Magnetic Field Sensor	14	✓	
02-6	Coil and Voltage Sensor	14	✓	
02-7	Jolly Spring Balance	14	✓	
02-8	Water calorimeter	14	✓	
02-9	Digital Multimeter	56	✓	
02-10	Optical Bench Set	14	✓	
02-11	He-Ne Laser	14	✓	
02-12	He-Ne Laser Base Mount	14	✓	
02-13	Simple Spectrometer	14	✓	
02-14	Line Spectrum Light Source	2	✓	
02-15	Measurement System of Temperature Coefficient of Metal Resistance	14	✓	
02-16	DC Power Supply	14	✓	
02-17	Thermo Electromotive Force Measuring Apparatus	14	✓	
02-18	Absorption of Beta-Ray A	14	✓	
02-19	Absorption of Beta-Ray B	14	✓	
02-20	Electron Specific Charge Measurement System	14	✓	
02-21	Planck Constant Measurement System	14	✓	
IME 11. Drawing Studio				
11-2	✓ Interactive Whiteboard System	1	✓	wall hanging
11-3	High Definition projector	2	✓	
11-4	Instructor Graphics Workstation	1	✓	
11-5	A0 Plotter	2	✓	
11-6	Desktop 3D printer	10	✓	
11-7	Application server	1	✓	
11-8	Intelligent Lectern	1	✓	
11-9	Smart graphics touch screen	1	✓	
ECE 07. Electronics and Circuits Lab.				
07-2	Electronics Circuits Lab	14	✓	
07-3	Electronics Circuits Kit	14	✓	
07-4	PCB CNC machines	1	✓	air supply(0.6MPa 100L/min.), ventilation

10/10

Appendix 5 Other Relevant Data

No.	Name of Document	Type	Original Copy	Issued by	Date
1	Higher Education in Egypt	Book	Copy	OECD	2010
2	Higher Education in Egypt	Book	Copy	European Commission	2012
3	Education in Egypt: Key Challenges	Book	Copy	Chatham House	2012
4	Higher Education Strategy in Egypt (2015 – 2030)	Book	Copy	MoHE	2014
5	Government's Strategy to Develop Higher Education in Egypt 2015 - 2030	Book	Copy	Strategic Planning and Policy Support Unit	2014
6	The Global Competitiveness Report 2015-2016	Book	Copy	World Economic Forum	2015
7	Survey Report of Higher Education Sector In Egypt June, 2013	Book	Copy	JICA	2013
8	Survey Report of Industry-University Cooperation and Industrial Human Resource Needs In Egypt, June, 2013	Book	Copy	JICA	2013
9	Project Summary for "The Project for the Establishment of Egypt-Japan University of Science and Technology (Oct. 2008～Jan. 2014)"	Book	Copy	JICA	2008
10	Project Summary for "The Project for the Establishment of Egypt-Japan University of Science and Technology (Feb. 2014～Jan. 2019)"	Book	Copy	JICA	2014
11	Egypt Higher Education Report	Report	Copy	Japan Society for the promotion of Science	2015
12	Agreement between the	Agreement	Copy	Bilateral	2009

	Government of Japan and the Government of the Arab Republic of Egypt concerning the Establishment of Egypt-Japan University of Science and Technology (E-JUST)			Agreement	
13	Progress of Temporary and Permanent Campus Preparation for 11th BoT meeting	Presentation	Copy	E-JUST	2015
14	Organogram of E-JUST V0.9	Document	Copy	E-JUST	2014
15	Engineering Undergraduate Programs Bachelor Degree in Engineering, B.Sc ENG. Bylaws, Curriculum and Courses Outlines, Jan. 2016	Presentation	Copy	E-JUST	2016

Appendix 6 References

6-1 Categories of Laboratories and Required Specifications

Room Type No.1 (IT/ Electric machinery and electronics / Mechatronics)

Fachilites needed : Power source (Single phase only)

Room Type No.2 (Basic laboratory)

Facilities needed : Power source (Single phase and three phase)
Facilities needed : Water tap and sink

Room Type No.3 (Chemistry laboratory)

Fachilites needed : Power source (Single phase only)
Facilities needed : Water tap and sink
Plumbing and exhaust duct construction upto the location specified by equipment side for installation of Fume Hoods
- Exhaust ducts from 2 Fume Hoods, which are installed in one room, are joined and raised to the rooftop.
- Exhaust fans are installed on the rooftop. The specifications must be adapted to the diameter of the duct, the difference in height, and the number of elbows on the duct route, and selected by the facility side.
- Operation control cables of the exhaust fans are laid by being cut-off at its leading end until the side wall nearby the installation place of Fume Hood.
- The end position of exhaust duct should be 300mm downward from the ceiling. No need any processing at the duct end but attach temporary sealing.
- The specification of the exhaust ducts should be "250A" and polyvinyl chloride made.
- 2 exhaust ducts are cut off and laid down from the ceiling, and non-return dampers are installed between these 2 exhaust ducts.
- Refer the annex regarding the place of the power source and plumbing system. (which requests 20A water supply and 40A drainage raising up from the floor to 100mm)

Exhaust ducts for Atomic Absorption Photometer
- Exhaust gas is exhaused to outside directly by ducts and fans from louver device on the wall or upper side of windows.
- Specifications of ducts and fans are as annex.

Gas detector
- Ethernet connection and single phase wall socket are installed close to the installation place of the body of detector where should be on the interior wall near a main entrance.
- However, through holes for laying cables from inside to outside of the room should be prepared near the main entrance.
- The through holes are used for laying cables which are for the installation of a gas alarm panel on the exterior wall at the corridor side of the main entrance. (Detailed specifications will be informed later.)
- There is no any request to the facility side regarding the body of gas detector inside the room, detector on the wall of corridor, and patrol light, because they will be installed by post-constructing anchor.

Room Type No.4 (Laboratory where machine tools are installed)

This laboratory should be located on the ground floor.
It requires the specifications such as ceiling height, wide carrying-in entrance and load-withstanding of the floor, which are suited to the specifications of intended equipments of machine tools. (Concrete floor thickness 300mm or more)
Facilities needed : Power resource (single phase and three phase)
Facilities needed : Water tap and sink
Facilities needed : Air resource (Pressure: 500kPa~700kPa, flow rate: 1000L/min. or more)
Regarding the air source, the installation of air tank at the corner of the laboratory should be considered.
Forging apparatus (08-06)
- Foundation isolation is needed. It should be apart far away from CNC machines etc. due to its vibration generation source.
- The location of this laboratory should be considered to avoid influence of vibration.

Welding booth (08-15)
- Welding fume exhaust apparatus is needed (It should be suited to 6 welding booth, the planned quantity).

Metal melting furnace (08-04, 08-05)
- The installation of funnel, duct, and fan for exhaust heat are needed due to its high heat generation resource.

Remarks for all facilities

- Votage fluctuation of power source must be within +/-10%. (Equipment side will prepare AVR individually for an equipment which has sever tolerance, such as +/-5% etc.)
- On the ventilation system to be prepared by facility side, "sand-proof" type should be employed.
- Securing the space of route and opening is requested side so that equipment can be carrying in without any trouble.
- Numbers and location of each utility should be considered depending on quantity and installation location of equipments

Notes

Above described is general classification of room type of laboratory.
Depending on the required utility of each equipment, required utility against laboratory shall be changed.
(For example, Room Type 1 + 3phase power source)

6-2 Required Specifications by Laboratory

No.	Serial N	Division	Laboratory Name	Building Location	Floor	Room Type	Additional utility	Major Equipments	Dimen. W x L (m)	Area (m^2)	Height (m)
1	A1	ECE	(40) RF Circuits	A	GF	1	nil	RF Cable for Vector Signal Analyzer, flexible cable Set for Signal Analyzer, etc.	9x12	108	3.5
2	A2	ECE	(39) Solid State	A	GF	1	nil	Electronics Demo. System, Function Generator, etc.	9x12	108	3.5
3	A3	ECE	(15) DSP & Digital Systems	A	GF	1	nil	Logic Analyzer, Electrical Measuring Instrument Set, etc.	9x12	108	3.5
4	A4	ECE	(36) Advanced Electronics	A	GF	1	nil	Electronics Demo. System, Function Generator, etc.	9x12	108	3.5
5	A5	ECE	(41) Microwave & Antenna	A	GF	1	nil	Antenna Training and Measuring System, Vector Network Analyzer, etc.	9x24	216	7.0
6	A6	ECE	(38) Optical Common Lab	A	1F	1	nil	Fiber Optics Educational Kit, Single Mode Fiber Optics, etc.	9x12	108	3.5
7	A7	ECE	(17+37) Data & Comm. + PBL	A	1F	1	nil	Computer Interface Base Unit, Spectrum Analyzer, etc.	9x12	108	3.5
8	A8	ECE	(14) Elecronics	A	1F	1	nil	Basic Electronics Lab. Equipment, etc.	9x12	108	3.5
9	A9	EPE	(94) Electrical Machines Labs	A	GF	1	3 Phase Power Source	Basic of DC Machines, 3 Phase Motor w/ Slip Ring, etc.	9x12	108	3.5
10	A10	EPE	(96) Power Systems Analysis	A	GF	1	3 Phase Power Source	Manual. Operated Synchronising Circuits, Investigations on 3 Phase Transmission, etc.	9x12	108	3.5
11	A11	EPE	(42) Power electronics Lab	A	1F	1	3 Phase Power Source	Self Communicated Converter Circuits, Field Oriented Control of Asynchronous Field, etc.	9x12	108	3.5
12	A12	EPE	(98) EPE PBL	A	1F	1	3 Phase Power Source	Basic Interface Unit, Photovoltaics Units, etc.	9x12	108	3.5
13	A13	EPE	(95) Switch Gear & Protection	A	1F	1	3 Phase Power Source	Investigation on 3 Phase Transmission, Overvoltage & Undervoltage Protection, etc.	9x12	108	3.5
14	A14	EPE	(97) High Voltage Lab	A	GF	1	Fence, Direct Earthing, 3 Phase Power Source	No equipment planned	9x12	108	7.0
15	A15	CSE	Applied Computer Engineering Lab	A	GF	1	nil	No equipment planned	9x12	108	3.5
16	A16	CSE	(43) (Computer Workshop)	A	GF	1	nil	Various Sensors, Laptop PC, 3D Printer, etc.	9x12	108	3.5
17	A17	CSE	(18) Microprocessor Lab	A	GF	1	nil	Microprocessors and Microcontroller Kit, etc.	9x12	108	3.5
18	A18	CSE	(19) CSE Project Based Learning Lab	A	1F	1	nil	No equipment planned	9x12	108	3.5
19	A19	CSE	(16) Simulation Software Lab	A	1F	1	nil	No equipment planned	9x12	108	3.5
20	A20	Generic Research Laboratory	Course Laboratory	A	GF	1	nil	No equipment planned	9X24	216	7.0
21	A21	Vacant Laboratory Space	Research Laboratory	A	GF	1	nil	No equipment planned	9X24	216	3.5
22	A22	Vacant Laboratory Space	Research Laboratory	A	1F	1	nil	No equipment planned	9x12	108	3.5
23	A23	Vacant Laboratory Space	Research Laboratory	A	1F	1	nil	No equipment planned	9x24	216	3.5
24	B1	IME	(31) Precision Measurement Lab	B	GF	1	nil	Tool Makers Microscope, Profile Projector, etc.	9x12	108	3.5
25	B2	IME	(28) Manufacturing Lab (30) CIM Lab	B	GF	4	nil	Master CNC Training Center including CNC Lathe, Flexible Manufacturing System, RFID Training Kit, etc.	9x24	216	7.0
26	B3	IME (Innovation School)	(25) IME Applications Lab	B	1F	1	nil	PC, Instructor Graphics Workstation, Plotter, Projector, etc.	9x12	108	3.5
27	B4	IME (Innovation School)	(26) CAD RE Lab	B	GF	4	nil	PC, 3D Printer, Plotter, Projector, etc.	9x12	108	3.5
28	B5	IME	(27) Motion Analysis Lab (29) Ergonomics Lab	B	1F	2	nil	Biomedical Measuring System, High Pull Force Equipment, Eye Movement Recorder, etc.	9x12	108	3.5
29	B6	School Lab (MTR, IME)	(12) Automatic Control Lab	B	GF	1	nil	DC Servo System, Digital Pendulum, Level/Flow Process Control, Temp. Process Control, Pressure Control, etc.	9x12	108	3.5
30	B7	School Lab (MTR, IME)	(13) Mechanical Vibrations Lab	B	GF	1	nil	Universal Vibration Apparatus, Vibration Sensor, Whirling of Shafts Apparatus, Impact Test Hammer, etc.	9x12	108	3.5
31	B8	MTR	(33) Mechatronics and Robotics Lab	B	GF	1	Air Supply	Robot arm, Universal Mechanism Kit, Pneumatics and Electro-Pneumatics Apparatus, Production Line, Handling Station, Storage Station, Routine Station, Disassembly by Robot Station, etc.	9x24	216	7.0
32	B9	MTR	(118) MTR project based learning track	B	1F	1	nil	No equipment planned	9x12	108	3.5
33	B10	MSE	(35) Materials Processing Lab.	B	1F	4	nil	Ball Milling, Induction Furnace, Rolling Machine, Single Screw Extruder, etc.	9x24	216	3.5
34	B11	MSE	(34) Materials testing and characterization lab	B	GF	4	nil	Friction and Wear Testing Machine, Ultrasonic Flaw Detector, benchtop XRD, Upright Microscope, etc.	9x24	216	3.5
35	B12	MSE	(111) MSE Project Based learning Lab	B	GF	4	Cooling tower, outdoor	No equipment planned	9x24	216	3.5
36	B13	Vacant Laboratory Space	Research Laboratory	B	1F	2	nil	No equipment planned	9x12	108	3.5
37	B14	Vacant Laboratory Space	Research Laboratory	B	1F	2	nil	No equipment planned	9x24	216	3.5

No.	Serial N	Division	Laboratory Name	Building Location	Floor	Room Type	Additional utility	Major Equipments	Dimen. W x L (m)	Area (m^2)	Height (m)
38	C1	CPE	(48) Chemical Engineering Process Control	C	GF	3	Ventilation	level, Flow, Pressure, Temp Control Process Apparatus, Multifunction Process Control Teaching System, etc.	9x12	108	3.5
39	C2	CPE	(46) Chemical Process Technology	C	GF	3	Ventilation, 3 Phase Power Source, Gas Detector	Solid Liquid Extraction Unit, Coagulation, Flocculation and Settling Point Plant, Atomic Absorption, etc.	9x12	108	3.5
40	C3	CPE	(59) Unit operation lab	C	GF	3	Ventilation Gas Detector	Batch Distillation Column, Liquid Extraction Unit, Gas Absorption Column, Crystallization Column, Heat Transfer Pilot Plant, etc.	9x12	108	7.0
41	C4	CPE	(72) Petrochemical Lab.	C	GF	3	Ventilation, 3 Phase Power Source	Gay-Lussac's Law Trainer, Pour Point Koehler Cloud and Pour Point, Sulphure Content Equipment, etc.	9x12	108	3.5
42	C5	CPE	Catalysis Engineering Lab	C	GF	3	Ventilation	No equipment planned	9x12	108	7.0
43	C6	CPE	Modelling and Simulation Lab	C	GF	3	Ventilation	No equipment planned	9x12	108	3.5
44	C7	CPE	(47) Corrosion and electrochemistry	C	1F	3	Ventilation	Potentiostat Unit, Fuel Cell Trainer, Electrochemical Expertimens system, etc.	9x12	108	3.5
45	C8	CPE	(45) Physical Chemistry& reaction Kinetics and Catalysis Lab	C	1F	3	Ventilation Gas Detector	Chemical Reactors Apparatus, Atomic Absorption, Catalytic Reactor, etc.	9x12	108	3.5
46	C9	CPE	(57) CPE Project Based Learning Lab	C	1F	3	Ventilation Gas Detector	UV/vis Spectrophotometer, Atomic Absorption, Muffle Furnace, Analytical Balance, etc.	9x12	108	3.5
47	C10	ERE	(51) Thermo-fluids Lab	C	GF	3	Ventilation	Air Conditioning System Model, Capacity Control and Faults in Refrigeration Systems, Heat exchanger supply unit, Base Module for Experiments in Fluid Mechanics, etc.	9x24	216	3.5 m
48	C11	ERE	(50) Fuel Lab	C	GF	3	Ventilation Gas Detector	Modular Test Stand for Single Cylinder Engines, Universal Drive and Brake Unit	9x24	216	7.0 m
49	C12	ERE	(70) ERE Project Based Learning Lab	C	1F	3	Ventilation	Wet Cooling Tower, Cooling Column, etc.	9x24	216	3.5 m
50	C13	ERE	(52) Alternative Energy (49) Renewable Energy Lab	C	1F	3	Ventilation, 3 Phase Power Source	Basics Renewable Energy Trainer, Small Wind Power Plant, Wind Power Plant System, Advanced Fuel Cell Technology Training System / Fuel Cell System, Fuel Cell Trainer, Solar Module Measurements, etc.	9x24	216	3.5 m
51	C14	ENV	(60) CEE ENV Lab 1	C	GF	3	Ventilation	No equipment planned	9x24	216	3.5
52	C15	Generic Research Laboratory	Course Laboratory	C	GF	3	Ventilation	No equipment planned	9x24	216	7.0
53	C16	Vacant Laboratory Space	Research Laboratory	C	GF	3	Ventilation	No equipment planned	9x24	216	3.5
54	C17	Vacant Laboratory Space	Research Laboratory	C	1F	3	Ventilation	No equipment planned	9x24	216	3.5
55	C18	Vacant Laboratory Space	Research Laboratory	C	1F	3	Ventilation	No equipment planned	9x12	108	3.5
56	D1	Basic Science	English Language Lab	D	1F	1	nil	No equipment planned	9x24	216	3.5
57	D2	Basic Science	Japanese Llanguage Lab	D	GF	1	nil	No equipment planned	9x24	216	3.5
58	D3	Analysis Center	Chemical Storage Room	D	GF	1	nil	No equipment planned	9x6	54	3.5
59	D4	Analysis Center	X-Ray	D	GF	2	nil	No equipment planned	9x6	54	3.5
60	D5	Analysis Center	NMR	D	GF	2	nil	No equipment planned	9x6	54	7.0
61	D6	Analysis Center	Office Area	D	1F	1	nil	No equipment planned	9x6	54	3.5
62	D7	Analysis Center	Classrom	D	1F	1	nil	No equipment planned	9x6	54	3.5
63	D8	Analysis Center	Chromatography Organic Analysis	D	1F	2	nil	No equipment planned	9x12	108	3.5
64	D9	Analysis Center	Preperation Lab	D	1F	2	nil	No equipment planned	9x6	54	3.5
65	D10	Analysis Center	Spectroscopy	D	1F	2	nil	No equipment planned	9x12	108	3.5
66	D11	Tech. Planning / Safety Management Of	Seminar Room	D	GF	1	nil	No equipment planned	9X12	108	3.5
67	D12	Tech. Planning / Safety Management Of	Data Library	D	GF	1	nil	No equipment planned	9X6	54	3.5
68	D13	Tech. Planning / Safety Management Of	Meeting Room	D	GF	1	nil	No equipment planned	9X6	54	3.5
69	D14	Tech. Planning / Safety Management Of	Safety Management Office	D	1F	1	nil	No equipment planned	9X6	54	3.5
70	D15	Tech. Planning / Safety Management Of	Tech. Planning Office	D	1F	1	nil	No equipment planned	9X6	54	3.5
71	D16	Tech. Planning / Safety Management Of	TMD Office	D	1F	1	nil	No equipment planned	9X6	54	3.5
72	D17	Tech. Planning / Safety Management Of	Classroom	D	1F	1	nil	No equipment planned	9X6	54	3.5
73	D18	Microscope Center	SPM	D	GF	2	nil	No equipment planned	9x6	54	3.5
74	D19	Microscope Center	Laser Micorscopy	D	GF	2	nil	No equipment planned	9x6	54	3.5
75	D20	Microscope Center	Electron- Microscopy TEM/SEM/FE SEM	D	GF	2	nil	No equipment planned	9x12	108	7.0
76	D21	Microscope Center	Office Area	D	1F	1	nil	No equipment planned	9x6	54	3.5
77	D22	Microscope Center	Classroom	D	1F	1	nil	No equipment planned	9x6	54	3.5
78	D23	IME	(55) Digital Manufacturing Lab	D	GF	4	Strict Env. Control	No equipment planned	9x24	216	3.5
79	D24	Generic Research Laboratory	Course Laboratory	D	GF	1	nil	No equipment planned	9X24	216	7.0
80	D25	Vacant Laboratory Space	Research Laboratory	D	GF	1	nil	No equipment planned	9x24	216	7.0
81	D26	Vacant Laboratory Space	Research Laboratory	D	GF	1	nil	No equipment planned	9x24	216	3.5
82	D27	Vacant Laboratory Space	Research Laboratory	D	1F	1	nil	No equipment planned	9x24	216	3.5
83	D28	Vacant Laboratory Space	Research Laboratory	D	GF	1	nil	No equipment planned	9x6	54	3.5

No.	Serial N	Division	Laboratory Name	Building Location	Floor	Room Type	Additional utility	Major Equipments	Dimen. W x L (m)	Area (m^2)	Height (m)
84	E1	IME	(08) Mechanical Workshop -1	E	GF	4	Ventilation	Universal Grinding Machine, Hydraulic Press, Universal Milling Machine, Forging Press, Sand Casting Kit, Lathe, Column Drill, Manual Arc Welding Station, Universal Bender, Hydraulic Surface Grinder, etc.	15x24	360	7.0
85	E2	IME	(10) Mechanical Workshop -2	E	GF	4	Ventilation	Laser Cutting System, Surface Metrology and Form Measurement System, Basic CNC Training Center, Hydraulic Surface Grinder, Multipurpose Milling Machine, Precision Lathe, CNC Electric Wire Discharge Machine, etc.	15x24	360	7.0
86	E3	Basic Science	(06) Basic Engineering Lab-2 (Chemistry, Energy and Env).	E	GF	3	Ventilation, 3 Phase Power Source, Gas Detector	Thermal Conductivity of Building Materials, UV/vis Spectrophotometer, Convection and Radiation, etc.	12x24	288	3.5
87	E4	Basic Science	(1) Lab-1 (Chemistry 01)	E	GF	3	Ventilation	Electro Analytical Scale, pH Meter, Absorption Spectrophotometer, Centrifuge, etc.	12x24	288	3.5
88	E5	IME	(09) Monotsukuri Center	E	GF	2	Ventilation	Function Generator, Inverted phase-contrast microscope, Stereo Microscope, Scanning Electron Microscope, etc.	15x24	360	7.0
89	E6	CSE	(03) Computer Programming Lab	E	GF	1	nil	Interactive Whiteboard System, High Definition Projector, Intelligent Lectern	15x24	360	3.5
90	E7	Basic Science	(05) Basic Engineering Lab-1 (23) Instrumentation Lab	E	GF	2	Ventilation, Air Supply	Desktop PC, Electrical Circuits Kit, PCB CNC machines, etc.	12x24	288	3.5
91	E8	MSE	Material Science Lab (04)	E	GF	4	Ventilation	Tensile Testing Machine, Rockwell Hardness Tester, Thermal Conductivity Trainer , Viscometer, etc.	12x24	288	3.5
92	E9	COE	Universal Wet Lab for COE (1)	E	MF	3	Ventilation	No equipment planned	12x24	288	3.5
93	E10	COE	Universal Wet Lab for COE (2)	E	MF	3	Ventilation	No equipment planned	12x24	288	3.5
94	E11	Basic Science	(2) Exprimental Education Lab (Physics)	E	MF	2	nil	Line Spectrum Light Source, Thermo Electromotive Force Measuring Apparatus, Absorption of Beta-Ray B, Electron Specific Charge Measurement System, etc.	12x24	288	3.5
95	E12	Basic Engineering IME	(11) Drawing Studio	E	MF	1	nil	Grahpic Workstation, A0 Plotter, 3D Printer, etc.	15x24	360	3.5
96	E13	ECE	(07) Electronics Circuits Lab	E	MF	1	nil	Electronics Circuits Kit, PCB CNC Machines, etc.	12x24	288	3.5
97	E14	COE	Clean Room for COE (1)	E	1F	3	Clean Room Facility	No equipment planned	12x24	288	3.5
98	E15	COE	Clean Room for COE (2)	E	1F	3	Clean Room Facility	No equipment planned	12x24	288	3.5
99	E16	COE	University Dry Lab for COE (2)	E	1F	2	nil	No equipment planned	12x24	288	3.5
100	E17	COE	University Dry Lab for COE (1)	E	1F	2	nil	No equipment planned	12x24	288	3.5
101	E18	COE	Nano COE (1)	E	2F	3	Clean Room Facility	No equipment planned	12x24	288	3.5
102	E19	COE	Nano COE (2)	E	2F	3	Clean Room Facility	No equipment planned	12x24	288	3.5
103	E20	COE	University Dry Lab for COE (4)	E	2F	2	nil	No equipment planned	12x24	288	3.5
104	E21	COE	University Dry Lab for COE (3)	E	2F	2	nil	No equipment planned	12x24	288	3.5
105	-	CSE	(54) Super Computer Lab	Data Center	GF	1	nil	No equipment planned	9x24	216	3.5
106	-	CSE	(44) Cloud Computig Lab	Data Center	GF	1	nil	Blade Unit	9x12	108	3.5